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on page 33



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ISSUE 8
FEBRUARY 1988

PUBLISHED BY
FUTURE PUBLISHING LTD
4 GLEN STREET, LETCH-
WORTH, GU
Phone: 0525-44034
Fax: 0525-44036

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SUBSCRIPTIONS
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Int'l (UK) Ltd
Purton
Gloucestershire GL8 0JF
0452 5501

MAIL ORDER
Future Publishing Ltd
The Station - Leicester
Leicester LE1 7BT
(0533 4567)

PHOTOGRAPHY
Adam Jones
Worcester, UK

PRINTERS
Chen Ink, Ltd
Rye, UK

DISTRIBUTION
All Distribution
Complete Code Ltd
Barnet (0816 290)

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1988

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NEWS

7

The stockbusters and losses of 1987, and a
look forward to the promises of the new year.



NETWORK POWER

20

Death to mainframes - how micros are climbing
together to outgrow the big boys.



STATESIDE STORY

30

How well are the ST and Amiga really doing in
the USA? Our Special Correspondent reports.



DISK EXTRA

Not just Purple Saturn
Day, but test both ST and
Amiga demos of this
Format Gold game. Also
Amiga fractal landscape
generator and an ST
database constructor
with... even as good to
read



SPECIAL OFFERS

94

A gaggle of great gifts, gathered together and
generously garlanded for you to gaze at in
glance.



GOLD DUST

99

Steve Gold uncovers inside stories and behind
room fireworks at Atari and Commodore.



LETTERS

100

More pearls of wisdom from the most liberal
among you. A good few answers to your
problems, too.



ESCAPE SEQUENCE

106

Anything funny happen to you over Christmas?
Here's what looked us.



SCAN AND DELIVER

24

The class of budget price graphics and text
scanning on the ST and Amiga. Read our in-
depth review of Canon's Handy Scanners,
then go and see how in the competition

GAMES



SCREEN PLAY

50

White heat for a cold new year! Purple
Saturn Day and Dual lead the way, hotly
pursued by Cosmic People and Roger Rabbit,
and news of next month's mainlander.



GAME BUSTERS

59

So many wilder worlds at
our own expense it - take any
mission in intercom, create
indestructible. Mentis in
Commodore and check
like mad in Night Sim 2.



REVIEWS



TOUCH SCREEN

18

Why fiddle with a mouse when you can triumph with a touch screen? See what we mean.



TALESPIN

67

Brand new adventure creator put through its paces: flopped places by our very own old warrior.



PROTEXT

70

Is text a power-user's word processor for the Amiga. We process many words in a full review.



SCULPT 4D

The best ever modeling package on a commercial micro? Here's the opinion of a top animal.



DELUXE PRINT II

85

Just too late for Christmas card; but great for Aquarian birthdays, we output on its output.



AUTOROUTE

82

Next, Best's new 57-lined road atlas could save pounds for you hardened drivers.

GRAPHICS



BACK TO THE FUTURE

12

Steve Bak, ace programmer of Night Night, StarRay and Goldminer offers his thoughts on 3D, Amigas, software houses and the universe.

1989: 16-BIT YEAR

Each of the last three or four years has been heralded as 'The Year of 16-Bit Warfare'. In truth, there are still 15 times as many 8-bit machines on the lips of fervent games players as 16-biters, so why should anyone be stupid enough to make the same claim again?

Well the runes have been cast and they all point to the fact that we are close to reaching a point of no return in 16-bit sales. Not only are ST and Amiga games increasingly released before their 8-bit brethren, but there are plenty designed exclusively for 16-bit machines, as the superior graphics and sound are essential.

Look at this month's master games if you want further proof. Purple Saturn Day and Basil are just too good graphically and technically to be converted down to 8-bits. Other versions may follow, but they will only be poor imitations of the originals. As software houses have seen their 16-bit sales explode, they are keen to give programmers full rein to produce new, fast, exciting games for the best machines. It's not just games programs which are taking off on ST and

Amiga. The number of graphics and music utilities, word processors, databases and typewriter simulators (7) which prior to be reviewed increases by the month. And best of all, the volume of 16-bit-originated products is on the up and up. It seems our beloved machines are at last being taken seriously.

Now the 16-bit snowball has gathered sufficient momentum, there will be no stopping it. Don't stand in the way unless you want to end up with very cold feet. For details.

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VOUCHERS

Starting this month you could save up to £17 on your mail order shopping through the pages of Format. At the back of this issue you'll find four discount vouchers - good with any advertiser displaying the Format Voucher logo - ideal for the January sales! Turn to page 228

TECHNOPHILE



ST SPEECH SYNTHESIZER

44

Don't let Amiga users get one over on you - build our way to use speech synth.



SCREEN SECRETS

78

How to make your screen disappear, turn green or come out in spots. A programmer's guide to graphics on ST and Amiga.



DESKTOP

87

Another trackload of tips and tricks for trendy ST users.



WORKBENCH

91

Another bank of facts and help for happy Amiga users.

COMPETITION

41

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SUPER ST SURPRISE

- **Super ST details**
- **Chip famine continues**
- **1988 Industry awards**
- **Charity games compilation**
- **Kickstart 1.3 problems**

Now an Amiga laptop?

To prove how close the ST and Amiga really are, no longer have rumors of the ST laptop story



■ Could an Amiga in '89 - check out the author's laptop.

Walt's much rumored Super ST - which has been making headlines more often than the Sunday Sport's WWF Bomber-on-the-Moon stories - is closer to being reality after UK-based Megabyte Computers' revelation that it is negotiating with Atari to supply its high-speed circuit boards.

Megabyte's board, which is currently on sale as an add-on for normal STs, comprises a 16MHz 68000 processor like processor in your ST is rated at 8MHz and claims an astounding 95% speed increase over standard machines. The circuitry consists of around 37 chips, but surprisingly the \$5 retail price is only \$249 (actual \$156), so it shouldn't push Atari's and protect price up too much.

According to Megabyte's statement from Kevin Henderson, Atari should have decided whether it is



■ The humble ST - sticking with the 68000 but set for a turbocharge courtesy of Kevin Henderson's (read) booster board.

interested in incorporating the circuitry within new "Super" STs by the time you read this.

Early rumors indicated that the processor inside the so-called Super ST was to be the 32-bit 68020. However, Bob Katz (Atari UK), technical director, crushed the story when he mentioned to developers earlier in the month

that to keep costs down the chip would in fact be a 68000.

It remains to be seen whether the new machine also has the promised Amiga-looking stereo sound, 48KHz colours and hard ware scrolling. Whatever the case, it can no longer be denied that Atari definitely has a new ST-compatible micro on the horizon.

emerged than an Amiga model kept it.

Details are vague, but it seems that a small company in the States is rehousing the Amiga boards in new cases with a 7" order monitor and quite for two disk drives. The provisional name is Journey Man, and the price? Um... \$2,200 is the current estimate.

The pair who produced it raised the necessary investment

capital by selling T-shirts and calendars. Release it, set for the new York Amiga in March...

phone Max Morrison in the States on 0101-401-94955110 for more details.

CHIP FAMINE STRETCHES INTO '89

The Great Memory Chip Scarcity was the mainstay story of '88, but warning announcements by Atari and Commodore have recently given the impression that all is over.

Not so. Investigations by Format reveal that ST and Amiga owners face real difficulties when trying to expand their machines' memory.

Fleets of suppliers are offering memory upgrade boards. However, if you are thinking of buying one, read the small print - it usually says "unavailable". This means that if you get the bare board, and buying the \$1.2K or more of memory chips to go on it is your job.

Commodore themselves - who trumpeted a press release about how they had assured a supply of 68M chips - are not without problems. Their 8800 Amiga 2080 expansion board is being supplied with only 240 of chips on it. And dealers who have agreed to buy the other 640 have been told to find independent sources.

The chips the ST and Amiga require are 256K DRAMs (Dynamic Random Access Memory) and quite a few prices. Brian Brooks of Regatta said, "We can get the 256Ks quite quickly, but prices for bulk orders will only give a price on request. At the moment, expect anywhere between £7 and £9." Maybe the real order giant whose catalogue is an IBM Smith, set the chips at £3.25, but the price has risen to £8.95 since printing. You need 16 chips for a 512K upgrade.

Minix mimix Unix

It had to happen. After all, Unix's recent press attention, combined with the fact that Unix is a trademark of AT&T, has prompted a Unix-like shell for the ST. Called Mimix, the operating system has all the outward appearances of being Unix: it is compatible with V7 Unix, it comes with many utilities that operate (and are named) identically to Unix versions. The Mimix manual costs £19.75 while the program disks - all nine of them - cost £99.44.

■ Department 35, Preston Hall, 65 Wood Lane East, Hemel Hempstead, Herts, HP2 4HG (0442 270700).





OPERATING DIFFICULTIES

Practical aspects of new Amigas bought in the Christmas rush are doing a few problems with the software - because they've got the new version of the Kickstart ROMs, the Amiga's operating system.

Although all software which Commodore describes as 'legally written' runs on the new ROMs, some games won't. In particular, Electronic Arts' *Amiga Formula One* fails to find the new system.

Steve Poots, of Commodore's technical support department, was puzzled. 'Kickstart 1.3 is hardly changed at all from 1.2, so there really shouldn't be any problems,' he said. 'We've had it under heavy testing for a long time now. What is true is that it takes up slightly more of the Amiga's five RAM on booting, so any program which is critically memory-tight on an old 400K might have trouble, but we haven't found any yet.'

NEW TOS

And on the subject of operating systems, the latest release date set for the new version of Amiga's TOS is March 1989.

When the last version of TOS was introduced in September '87 there were massive incompatibility problems because it ate up 14K of RAM more than the old version. Bob Katz, Amiga's technical director, says that the forthcoming version will be more compact, so there shouldn't be any similar problems.

The new TOS will come on two ROMs, and although Katz says it is too early to set a price for owners, owners that Amiga will only look to cover their costs. Expect a price of £15-£20.

Unsurprisingly, several of old TOS - pre-September '87 - won't be able to fit the ROM upgrade as the circuit board design was changed at the last revision.

the printed industry," he said.

The last charity compilation, *Soft Aid* in 1987, raised £704,000 for famine relief. The launch date for the new version has been previously set for Easter 1989.



■ Hughes - 'Extraordinarily generous'

THE SALES ARE ON

Prospective purchasers of 3½ and Amigas have never had it so good. To keep the 16-bit market bubbling in the post-Christmas lull, two major funding deals have been announced by national wholesaler Sales Distribution, with a third projected for the near future.

SD, have decided to promote the 3040 as a games machine - the same twenty games as in the 520 'Super Pack' will be funded with 3040s at £499 figure.

SD's second deal covers the Amiga. For £299 you get an A500, ten games including *Tetris*, *Star Wars*, *Wetall* and *Buggy Boy*, and the highly acclaimed art package *Proton Paint*.

And Alan Weintraub, has revealed that they plan to push the 512 in the music sphere with another bundle. 1940s will soon be topped with Steinberg's Pro-12 sequencing software, ideal for linking up via the MIDI port to a heavy board. This too will sell for £499.

■ Sales Distribution, 1-4 The Mews, Hatherly Road, Solihull, West Midlands B37 3YU

1988 INDUSTRY AWARDS

The 1988 microcomputer industry awards were announced amidst the popping of champagne corks (the winners) and bowls of oysters (the losers) at the banquet in December. The prize placards went to:

- Game of the Year: *Wings* (Frederic)
- Best Sound: *Genie* (Melbourne House)
- Best Graphics: *Dragonair II* (Bandai)

- Best Arcade Conversion: *Pommes GrandCair*
- Adventure of the Year: *Dungeon Master* (Microsoft)
- Simulator of the Year: *Rainbow Warrior*
- Utility of the Year: *Proton Paint* (Microsoft)
- Budget title of the Year: *Solitaire* (Mastermind)
- Programmer of the Year: The *Blanco* Brothers

And just to keep those boys at our sibling magazine ACE in the office next door quiet for a bit, we've got to admit that they did pick up the going for Magazine of the Year. Congratulations, eh? Now will you please stop telling us about it?

AUTISTIC TALENT

1989 will see the games software houses working together for charity in aid of autistic children. The project was launched at the annual computer industry awards back just before Christmas, and it's already won the support of four major games houses.

The idea is that publishers will contribute 16-bit games to a compilation disk of ten titles to sell for £29.95 each. Activision, Electronic Arts, High-Modem, and Fredder have all said they will sub-

sist games for consideration. Each game will be edited by a panel including Activision, Atari, Red Coustons and ST Amiga format publisher Greg Hughes - both fund-raising gamemasters who promise to ruthlessly weed out anything less than top-quality.

Launching the compilation, Hughes was confident that the games would be of a high standard. 'This industry is extraordinarily generous in its support of charity events, and has a genuine desire to help. For this, the games software industry has been much more generous to charity causes than their counterparts in

DIGITISING SERVICE

'You've seen all those glossy digitised screens in magazines, but how on earth can you get equally expensive images in your own paint package?' You could buy your own digitising kit, but with a camera you're looking at £800 or more.

PhotoFile is a new service aiming to solve this problem - it's a digitising-by-post service for those on-off PCs. You supply a photograph of the image you want, tell them what paint package you use, and they'll send the digitised file



■ A sample black-and-white digitised screen, courtesy of PhotoFile.

QUICKIES

- By the time you read this, European Amiga developers will have shifted in gear for 1989 from Commodore. A developer's conference was held from 18th-19th January in Frankfurt - we'll bring you full report next month.
- The profits of progressive titles were understood in December as all imported copies of the monthly date war game *War* from Space were impounded by the new custom. Rumour has it that they couldn't work how to sign them, so action has just been taken!
- PAL (Programmers Advice Line) is a new online group for 32 programmers in Germany and users of which produce its publication *Compuet* at 1000 Road, Stuttgart. Costs £55 AEM, November, PD 2000 and materials are at part of the guidelines provided.
- Calling all fans of Electronic Arts' own playing games - new books are now available at £5 each to help you finally get to the bottom of *Star Wars II* and *Wings*. (Electronic, Westwood, The Mavis Dugg and Jonathan Wright). Phone 0752 44085 for info.

The above slides are available from George Thompson Services, Dippes, Bendick, Arvan, Scotland R4.27 6BN. Tel: 09776002/234.
They cost £1.00 each or £14.99 for a pack of any eight including V&T & P&P.
There are no membership charges and orders are dispatched the same day they are received.



back to you on disk.

At the moment, the service is only available for the Amiga, although an ST operation is under development. Prices are £1.50 for each colour image, £1.00 black and white, plus 50p post and packing. Any resolution can be used, including 4096 colour (still made with screens below the image fills the entire screen, like a TV). Portable must be on top, playing their own disks at £2.00 each, as a presentation against

viruses.

If you've got a 3D object you need digitising - a fantasy character model, for instance - Portable can provide images suitable for dealing with 3D glasses.

■ **Portable**, PO Box 156, Nottingham NG2 4SQ 0562 437191/5

68010 upgrade kits

Following the recent correspon-

dence in Format's pages about upgrading an Amiga's 68000 microprocessor to a 68010, Coppe Side Industries are offering a kit to do just that.

For £27.50 on an A500, or £29.50 on an A2000, you get a 68010 chip and full technical manual for use. The extra £1 on the 500 is for a special screwdriver to undo the metal shielding inside the case - the A2000 doesn't need it. You will also need the special software patch sup-

plied on Format cover disk number 4 - both issues are still available.

The 68010 simply slots into your Amiga where the 68000 currently is, whereas you should see a speed increase of between 8 and 50% in your Amiga's operation, depending on what you are running.

■ **Coppe Side Industries**, 15 Coppe Side, Brimscombe, Godington, Surrey GU7 3HR

1988 AND ALL THAT!

The Format team cast a caustic eye over last year

Oscar Wilde once replied to a friend, when asked what he had written that morning, "Oh, I added a comma."

"What?" said the friend, "You spent a whole morning adding a comma?"

"Oh no," replied Wilde, "I also took it out again."

Perhaps this (Shadow) issue of Amiga UK has heard the story. In May, they listed the price of a 52057 at £100. Meanwhile Commodore cut the Amiga by £100, briefly putting it on parity

with the ST at £299, much to the relief of its dealers. Quick as a flash, Alan discovered the ST down to its original level for the Christmas push.

Two weeks away

There's a lot still in the pipeline. When you hear a manufacturer saying, "It's two weeks away, we're just finishing the manual off," you know there'll be a six month delay into the category far most of Am's announcements for 1988. Though to give them that

due, some products have always been intended for '88.

Then CD ROM, which we reviewed/previewed in the August issue, is still not quite on the shelves. The Starcy laptop may close in more than prototype form at the Which Computer Show in February and the super ST will take its first steps in January. Perhaps it's taken its first steps in standing in '89.

Commodore avoided the charge of not supplying what it announced... it didn't announce anything until the autumn, when the Amiga 2500, Transputer card



"Remember this, computerising things, doesn't make you a computer person. It makes you a computer user."

and AT Bridge Board were all listed as '89.

The most important launch of the year was undoubtedly the arrival in June of ST Amiga Format, though we are, of course, far too modest to mention this.

THE FORMAT AWARDS

No prizes, no payouts. Here are the combined opinions of the Format team on hardware and software in the following categories:

BEST GAME RELEASE

ST: Virus
Amiga: Intermight

WORST GAME RELEASE

ST: Super Breakout
Amiga: Quasmode

BEST NON-GAME

ST: Race Point
Amiga: Prostat

WORST NON-GAME

ST: 11-type keyboard emulator
Amiga: Photos-Paint memory (ditch), including most-gain background

LONGEST AWAITED

ST: Flat Field
Amiga: Blacksmith 1.3

BEST TYPED PRODUCT

ST: Perseus graphics board
Amiga: The Amiga, (did you see their Christmas ad?)

AMIGA BRIDGE BOARD

Format's story of 1988 products couldn't do justice without the Amiga AT Bridge Board - a PC emulator for the A2000. It has a special place in our hearts, retaining one of the few bits of kit which is generally available to the general in the street, but seldom reviewed.

With the revamped AT Bridge Board for review from Commodore's PC company, "No problem," they said. We ring with reminders, leave in the next month. There, it is, in stock, no problem." Commodore then changed their PC company, so we have to wait.

Amiga's Grant Barrett, Commodore's marketing manager, was at a meeting the evening before. We got a fax for Grant's attention in 96 pages, type them BIG. Grant answered his phone: "No prob-

lem, it'll be with you by the end of the month."

SEPTEMBER. He spoke to Lenky Radek, Commodore's marketing assistant. "No problem. Except the firm authorising the right has to be signed by Steve Barnett and Steve Franklin (the managing director)."

Mr Sean Barrett of the PC Shop, Open stocked on there was no problem.

OCTOBER. We ring Commodore. "No problem. The form's been signed, we're expecting one week in any day now." November. Rayn Commodore, Bridge Board and it took NOVEMBER. Rayn Commodore, Bridge Board not in stock.

Trying to get hold of a review copy of the newer AT Bridge Board just doesn't bear thinking about.

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BAK TO THE FUTURE

STEVE BAK: created nine games in 1988, has been ripped off by countless software houses, responsible for the Cuthbert series, might drop programming and buy an ice cream van. Read about the man, what he has to say about programming and his experiences in the computer industry.

Why does a man capable of earning £2000 a week quit his job for one which might make a tenth of that at best? Why does the author of an adult game often make more money than the creator of a great game? Why do programmers often think they're something special? Why am I asking all these silly questions? Read on, Steve writes, at least I hope some will be revealed.

Before I continue, let me state that this one — and only one — of the above applies to me. It's for you to decide which.

During the Autumn of 1987 I met a young programmer who had written a game and published it himself. The name of the company I can only just remember, the game itself I remember well. It was a good game with plenty of real ideas and a fair amount of technical merit. The programmer thought it would make him a reputation and some money into the bargain.

The game was a failure. A few weeks ago I saw the same game, hardly recognizable without a programmer's insight, being sold by a fairly large company and doing very well. Thank you. The game is a success, and the programmer has a good future ahead of him. This is what programming is all about: create the game, let someone else take care of the marketing! So ends the first lesson. To anyone out there who hopes to be a successful programmer — forget the business side of things; that's a job for businessmen.

Bak to Business

Let's get on with it, if you're going to write a game, the first thing you must have is commitment. Many people have approached me with part of a game asking what to do next. The answer is always the same: you should have decided that when you first started! That's not to say that attention and improvements can't

be made on the way, or even a fair amount of making it up as you go along." You must have a plan containing an overall idea of the whole game and what's going to be in it right from the start. If you don't you might as well just sit before you begin. Of course, some areas of the plan can be left blank and filled in later, but you must have the gamut to fill the blanks in later.

The first step next, you can start making real progress. Split the plan into small, independent parts, and work on one part at a time. Each part can be split into as many smaller parts as you like, the more the better! Concentrate on small routines, making each one work properly before moving on to the next. A couple of tips might be handy here. Comment your source code. It is very tempting not to, after all you understand it perfectly and anyone else will never read it. Bear in mind though, that you may need to return to your source years

Microsoft's latest core platform pack, MS-DOS Volume 1, contains four games. Three of them are by Steve Bak.

THE WISDOM OF BAK

Why are 16-bit games so expensive? In case you don't know, it's because of low quantities, high development costs and high production costs. But if you read the magazine article I wrote last August you should know that isn't right! Wrong! The first reason carries a little weight, but there's only real reason: a 128 game couldn't sell many more if it was offered at half the price! Here the so-called 16-bit budget titles have all but gone already, it's not just game makers more than twice the profit per unit for everyone in the chain: the programmer, publisher, distributor and dealer. In the real reason is greed, right? Wrong again! An anyone. That's not greed, that's business!

WHO IS STEVE BAK ANYWAY?

Just for the record, I am a 36 year old widower, no-strings game fanatic living in the Midlands. I bought an Apple IIe (the predecessor to the BBC) my first in 1982 as I couldn't get hold of a ZX81 or the ZX30. Unfortunately there were no decent games for it so I had to write my own. First was *Robot Wars*, written in BASIC and published by King Software. BASIC couldn't cope with what I wanted so I turned to machine code. My first attempt was a kind of *Ultima* Command, again published by King. After a couple more games on the IIe, I moved to (Z) in the Dragon. Remember the Cuthbert series? After that I went through a rapid succession of errors — *Fuddy Color Computer*, *DNA*, *C18*, *Enterprise*, *Master-GL* — before settling down with the Atari ST and Amiga. Each of these computers had their advantages and disadvantages and each earned me a living, some better than others.

For the time being I shall stick with the two current 16-bit machines. The 80000 is a programmer's dream compared to £250, £500 and £100. Both the Amiga and ST are hard to stay within a couple of years the software base is going to be enormous. I can see these two computers lasting much longer than the ZX81, ZX30 and

Amiga are cheap enough to buy for games use and powerful enough to do anything that you could want a home computer to do. Next you can actually find good programming on a C64 or doing financial planning on a Spectrum!

In the early days I preferred to work like most programmers at night. Nowadays, with my own office, I do things differently. I think most people would agree that my output is fairly prolific. In 1987 I completed seven games, in 1988 I completed nine. I've also earned a great deal of money — but at a price. I now work around 80 hours a week, drinking coffee and Coke constantly. I smoke around 60 cigarettes a day and get drunk every night — not an ideal thought for a dietician or model! I have had a good time as a programmer, but now is the time to quit. *Flight Flight* will be my last game, at least, under these conditions.

What does the future hold? Well... I could buy an ice cream van, selling ice cream in the summer months like a nice job. Perhaps I might open a fish and chip shop in Paris. There is a third possibility which, at the moment, sounds the most plausible: I may well start a 16-bit software development house.

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FRIGHT NIGHT



Just look at those superb graphics (created by Peter Lyons). And the ease of most sprites (things controlled by Steve Nale) - it's *Fright Night* - the game of the month - on the Amiga. By all accounts this is Steve's last project for the Amiga, so after that you may see him (and your screen) flapping its wings.

The ST version won't be programmed by Steve, but possibly by Vincenty Peres in the States.

Price of the game, if you're interested, will be £39.95. Details on 0205 580050.



BACK PROLOGUE

Digital Life is probably the best graphics utility for the ST. It does have one big drawback for games programmers and artists: it lacks R.Y. co-ordinates making it almost useless for anything but drawing pictures. Normally I use Autodesk's Paintworks, but having recently seen a very brief demo of AM's Plan Paint I'm tempted. It could be what ST owners have been waiting for - it's worth checking out.

Amiga users are spoilt for choice. Most will get Paint free with their computer which is really better than anything on the ST. Before

Paint it is terrible, and there are a host of even better, and more expensive, packages out there.

Hardware-wise, the ideal program development setup for me is a Mega ST with mono monitor connected - via an RS232 which sports data at 15000 baud - to a 520 ST or A200. I did use the parallel port at one time when downloading to the C64, it's much faster, but I damaged two 10400's and two C64s - much too expensive a risk to take with Mega

STs and Amiga! For programming and test entry, the ST's mono mode is brilliant and very easy on the eyes. The whole setup is more reliable and faster than anything I'm afraid. I have a running disagreement with Les (San He of Singapore it turns out this point). He uses A2000's for downloading data to either C64s or A200s. No matter what the pros and cons are from a programmer's point, he can't deny that his setup costs two or three times more.

BAK PREDICTS

Sometimes this year at least one publisher will launch a range of 15-bit games priced at £2.99. Laugh if you like, but watch the news.

BAK BITES BACK

The Steve Bak awards (in no particular order).

THE GOOD

- The guys who designed the Amiga hardware.
- Geoff Hammond for The Beatles.
- Andy Powell for Demos.
- Jack Brandt - not just for the Ward ST, but for being a Polish Jew who survived Auschwitz.
- Ceter Brainer for starting it all.
- Whoever wrote Boulderdash.
- Williams for Defender.
- Konrad for Geyser.
- Ian Han for sheer knowledge.
- John Symes for never cheating programmers.

THE BAD

- The guys who designed the Amiga software.
- Whoever is making money from Amiga fanzines.
- Commodore UK's technical and marketing support.

THE UGLY

- Ex-Power House boss Adrian "the chaps" in the post Whitbread.



■ Spilling images doesn't look like that! Oh yes it does. At least, to programmer Steve Bak. The entire backdrop, the various animal objects and the positions of the graphic images are all portrayed in this shot which forms the backdrop to the Page scene.



TOUCH WINDOW

£458.85 (optional £15 stylus) ■ All STs, Amiga version under development ■ Eagle Computers, 2nd Floor, Glamorgan House, David Street, Cardiff, CF1 2DH (0222 390288)

Didn't you've visited stores, banks or airports with computer monitors displaying transactions or product information. Nothing special about that. But some of these displays have messages asking you to touch the screens in specific spots. Doing the dirty usually results in the display advancing or retrieving a page of information. What you're doing - in effect - is using your finger, nose or other unpleasant part of your anatomy to direct a pointer to a particular place on the screen. When the program detects that the pointer is in a certain area, it jumps

Already there's a choice of device for communicating with the computer: keyboard, joystick, mouse and graphics tablet. Now there's the touch screen. RICHARD MONTEIRO pokes his way around.

to a sub-routine which might display all rights to Australia that day, inform you how to apply for a mortgage or tell you why you should buy Nissan's little van now.

Eagle's Touch Window - which can be turned to a see-through graphics tablet (see issue 4) that is placed in front of your ST's screen - gives you the option of moving the mouse pointer simply by pointing to any part of the display.

For real

Along with the touch screen, which clings to your ST with velcro straps and has a plug running into the serial port, you get a power supply and software. The software contains two drivers: for machines with old and new ROMs. Before running the driver you must copy the correct driver into a blank disk, rename it and run a configuration file.

After the driver is up and running, the QDM pointer will now follow you wherever you press the touch screen. You can use your finger, a pen or some other stylus to move the pointer. An overlay at the bottom of the screen tells you where to press the touch screen if you want to simulate a single mouse click, a double mouse

click or a click and drag.

Most QDM programs like Degas Dts, First Word Plus, Power (S&G), C-Browse, Sports Factory and so on will work correctly with the Touch Window driver installed. However, it's very tricky to get the pointer to move smoothly enough, and since the screen can only work to 256 pixels horizontally, the resolution is not good enough for accurate work on a 640-pixel wide medium- or high-resolution screen.

Any use?

Possible applications include on-line demonstrations, factory or process control, public information screens, points and teaching the physically handicapped.

In its favour, the Touch Window is very responsive when it comes to pointing at random areas on the screen. Unfortunately it's expensive, not as accurate as a mouse or the graphics tablet (mentioned in issue 4), and reflects quite a bit of glare. It's a good piece of hardware, but too expensive for home use. Who's going to use it? Certainly not little Johnny for playing games. Businesses, academic institutions, county councils (information points), yes.



features

0 1 2 3 4 5

performance

0 1 2 3 4 5

ease of use

0 1 2 3 4 5

manuals

0 1 2 3 4 5

format value

0 1 2 3 4 5

for

- Responsive
- Simplest form of communicating with the ST to date
- Works in all resolutions

against

- Expensive - specialist interest only
- Precision not good enough for accurate drawing

HOW IT WORKS

The touch screen consists of two facing, transparent, conductive layers (known as angrule sheets) which send the ST the co-ordinates of the point you indicated. The two layers contain one another only at the touched point, when with the volts applied across one of the layers the circuit is completed. The voltage at the touched point is measured and is taken as one co-ordinate of the touched point. This analogue level is converted to digital by an analogue to digital converter (ADC). The roles of the drive and seal non-driven resistive layers are then reversed to determine the other co-ordinates. Simple, really.

Resolution of the touch screen is determined by the ADC. Eagle use an 8-bit ADC which can resolve 256 co-ordinates in both horizontal and vertical directions. Both axes are measured 75 times per second, and data is sent to the ST via the RS232 port at 9600 baud.

The window automatically averages the area of contact to give the co-ordinates at the centre of the contact area. This allows good resolution to be achieved even when touching with a large object such as a finger.



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FUTURES

NET WORKING

In an ideal world every computer, printer and storage device in an office would be linked together (networked). Any device could transmit or receive information to and from any other device. **RICHARD MONTEIRO** discusses the current state of play and ponders the future of networks.

Whenever there's a body of computer users in a room, building, city or country who share information, storage facilities and expensive hardware, you're guaranteed to find some form of network in operation. A network is simply a fancy name for a communication link between two or more devices. These devices can be computers, printers, hard disks, tape drives — indeed, anything that can receive and transmit data.

Networks are generally regarded as stuffy things for doing stuffy jobs — you know, serious things. Like sending the end-of-day sales report to various offices in the building, dumping a file to a printer that's right down the other end of the building, transferring orders to various factories around the country, searching for information on a data storage device that may be in another country or even on a satellite orbiting Earth.

But there is a lighter side to networking: multiuser games. Imagine a music game in which your opponents — represented on screen as graphic blobs — are controlled by intelligent human beings. *Offbeat*? Playing a music game — full of silly hundreds of notes, away behind a different mode of computer.

Take a trip through the bewildering, but ultimately exciting, world of networking. Read on!

Spreading the word

The most common network is a Local Area Network (LAN), and is designed to serve a local establishment such as a factory, school or office. No at Future Publishing has several networks in operation; the largest being the one connecting together the layout artists' computers — more on this elsewhere.

LANs have different layouts (topologies), methods of data transmission and types of cable connecting computers and peripherals together. Twisted-pair, coaxial and fibre-optic cables are the three usual data-carriers.

Twisted-pair wires, which are used in telephone networks and local exchanges, consist of a single line with an earth return. The cable pairs are twisted to reduce 'crosstalk' with other wires. Coaxial cable has an outer earthed 'shield' which functions as a shield to reduce electrical interference and crosstalk. Optical fibre cable carries light pulses — and not electric current — which means it is unaffected by electromagnetic fields.

Knock twice

Network topology is the grandiose term for various types of network layout. There are three main types: ring, star and bus.

A ring network is formed by a continuous ring. In other words of nodes — devices — each linked to the

next in line. Each device — which can be a workstation, terminal or printer — has a unique identification address. Messages are passed from one node to the next until the messages reach the required destination. Tokens — labelled packets which can have data read from or written to them — constantly whizz round the ring, which is why this setup is often called a token-passing ring. Its tokens could be carrying data from any node to any other, it is essential that devices in a ring constantly check their passing data-carriers.

To ensure that signals sent from the transmitting machine have been correctly received by the specified machine, the transmitting node checks the token after it has completed its circuit. The disadvantage of

GLOBAL COMMUNICATION

Whereas a local area network serves the requirements of an organisation for interdepartmental communication, a wide area network serves a wide geographical area and may encompass a country or even the entire world. WANs usually employ packet switching technology. Packet switching is a method of collecting data in a block and sending it to a local packet exchange, from where the block is transmitted to its destination exchange.



NETWORKS FOR THE ST

At the moment you can choose from three Atari Network from Muntz and PicoMini and PicoMini Plus from Software Punch.

The unimaginatively titled Atari Network follows the ring topology and can have 124 nodes. There's little restriction as to what can be included in the network. The system lets you access and alter data on other machines - including the other machines you own - without in any way affecting their files. Devices can be located together at a cost of \$150 per item. There's also a one licence of £100 for the software.

One thing to be wary of, the file server can't be Atari ST. A PC or an Amiga will do. All the gory details from Muntz, 24 Grosvenor, Westminster, Cambridge, 020 3691 0420 042010.

Two networking systems are available from Software Punch, with a third awaiting completion. PicoMini is the more basic and is simply a printer sharing system. Data is transferred via the RS232 at 9600 bits per

second. Cost per user is £240. PicoMini Plus handles data around the bus network at 19200 per second. It can nationally accept 12,000 users. Price per user is \$400. Punch's forthcoming network will work using Ethernet conventions. It will operate at 10Mbits per second and will cost a staggering \$650 per node. Software Punch are at 38 All Road, Jarrow Park, Liverpool, 017 939 1194 1194 5675.

Both company Connect computers to March 1989. 486T, as it is presently being called, will surface as a fast 486 to 486 port optical ring network. According to Peter Redford, 550A's adoption sales manager, the system doesn't appear to have any limit to the number of users, should cope with most devices and will let you alter information held on another machine. Price hasn't been finalised, but it's likely to be near £250.

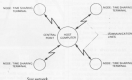
ring network is that if there's a break in the ring the whole network goes down. Most networks in the UK are ring-based, due to the development of the Cambridge Ring at Cambridge University in the late 70s. Of course, any network worth its tokens will have one or more backup circuits.

Star performer

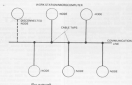
A star network has a central controller in the server - usually a computer containing a storage device - to which all nodes are connected. Data is transferred to specific nodes when requests for information come in. This type of network is used in time sharing systems where the central controller is a host computer to which all terminals are connected via modems, multiplexers and telephone lines. If the main in the middle breaks down then again the whole network ceases to function.

A bus network is a communication line or channel to which various workstations and other peripherals are attached. Any device can be added or removed without affecting the system. Each device has a specific address and messages are sent along the line until the communication reaches the specified device. The advantage of bus networks is that if one or more devices fail, the network continues to operate.

Rock Rover's Ethernet is a typical bus network. It uses a system known as CSMA/CD - Carrier Sense Multiple Access with Collision Detect. But you can't use it to write wordprocessors. The system limits to the carrier wave to



■ A Star network centres around one powerful main computer.



■ A Bus network doesn't need a central controller.

SPEAK TO ME

Consider the speed at which you can communicate with your phone lines using a modem - 24,000 to 144,000 bits per second. At the highest speed that's 300 characters a second (just over a quarter of a B per second). There's no way you could run a network successfully using such low speeds; straight up you'd get 10 or more users all waiting to update a sales ledger; the file has to be loaded into the user's terminal, altered and then sent back. Say the file is 5000; it would mean waiting just under half an hour for the file to arrive. That's why the average network data rate is at the rate of four million bits per second (128,000 per second). Advances in technology are pushing speed limits up, and it is expected that transfer rates of 100 million bits per second will soon be reached.

PLAYING ALL OVER THE WORLD

Game players in the states have, for some time, been treated to the ultimate in interactive, real-time, multi-user games - Air Warrior. The game was created by the Naval Corporation of Virginia for General Electric's online service Milos. Subscribers to Milos can log into the system from anywhere in the States and fight each other over the skies of three hot-spot countries.

Players can slide together to form squadrons, team together to grow fighters or fly on their own. It is possible to communicate with members in briefing rooms to exchange tactics/messages using airwaves. The system also uses colour graphics means, and can cope with 640 players.

Conventional multi-user games like 4860 and Shadow can only give you a game-world using descriptive text. Air Warrior gives you full enhanced 3D graphics and sound that you'll expect from a normal game. 4860 and Shadow can be played using standard console software. Your computer just sends your data to the host - the rest or machine handles after the

game at the other end of the line - and displays any messages sent from the host, do far as your computer is concerned the best flying tactic and forth could be anything.

Air Warrior takes a different approach. It is a program that employs the separate capabilities of a console package and a fully-blown flight simulator. This program creates the graphics you see on screen but the ordinary games, the information on the behavior of other planes - that is, other players - is relayed via the host. The program also sends out information to the host about your position.

Basically not all computer games can enjoy Air Warrior because the controlling software isn't available to all types of users. However, you're pleased to know that ST and Amiga versions are available. In next time you're over in the States, you'll know who to call - and it isn't Shakespeare.

NETWORKS FOR THE AMIGA

Calculation from Celsus Systems (where else?) seems to be the choice of many large organisations. Several studies dotted around the country and Super-Gas (suppliers of bottled fuel) use Celsus's networking software and Miniserv's node hardware. The ring network usually consists of several 63000s and various printers. In practice the ring can support around 100 nodes.

Although Celsusnet is relatively slow, only transferring data at roughly 0.5Mbits per second, it can expand into a wide area network. This is possible because the sys-

tem is connected together via the serial interface - and you know how easy it is to fit a modem to the serial port.

The hardware kits are available from Miniserv (0639 660115), and cost £200 for the 63000 and 61000 versions and £160 for the 63000 version. Network software then costs £69.9 (FMS-7), costs £110.

The Amiga Centre (Isleford) is distributing an Ethernet kit for 63000 machines. It's expensive though, coming in at £750-800 per node. Details on 020-867 4262.

detect if other terminals are handling data.

All terminals on the network can do this at any time because of the multiple-access nature of the system. If two terminals listen simultaneously and detect no transmissions, they may both transmit data at the same moment. Both transmissions will then collide, but both terminals will detect the situation, and both will wait a random time before retransmitting the data. Clever stuff.

Network 4000

Greater data transfer rates will be the next thing in store for networks. Fibre-optic cable has opened so great possibilities: not only is the data free from electromagnetic disturbance but it also moves at incredible speed. The data bottleneck isn't with the cable type though, but with the hardware transmitting or receiving it. Advances must therefore be made in computers before any appreciable speed increases can be gained in a network. Already there are networks at a 100 Mbits per second network - that's almost 10 times faster than the current fastest! Look forward to the day that data can be sent and received at the speed of light.

Network standardisation is also necessary. Currently there are over 100 proprietary networks including Tokenet, Ethernet, Craynet, PC-Net... And they all have different topologies, transfer speeds, connections and so on. Is an ideal world where every computer, printer and other I/O device would have the same network port - call it IdealNet if you like. Similarly the soft-



■ Air Warrior on the Amiga disk. The planes you see here within your cockpit belong to other players that have logged on. You can blow other players out of the sky or defend them and take on larger forces.

ware for IdealNet would be available for every machine. The result: terminology. Any computer in an office could speak or use any other computer, storage medium or printer.

Imagine also if the processing power of old machines in a network could be tapped by active computers. Transputers are based on this idea. But that's another story...

NEXT IN LINE

The current crop of computers aren't provided with any easy means of networking. Sure you can buy an interface card, some proprietary operating system, but it costs. Many of tomorrow's super computers will be totally networked.

One you might consider is Steve Jobs' MacII machines. The 11800 68000 (plus 68440 multi co-processor) based computer will have, in its arsenal, 8 Mb of RAM as standard, SCSI interface, real-time 1.57 optical disk drive, real-time) cache bus of 256 Mb of storage, floppy Parallelport (and you are in serious trouble if what you get on paper), also drive-driven (no operating system, 68P14001 digital signal processing chip offering 60-quality 44.1 kHz 16-bit stereo sampling, and the Ethernet port.

The crucial Ethernet port means the MacII machines can talk to virtually anything (other PCs, serially-plugged terminals, fax, that kind of thing - I'd). The 68P14001 Ethernet transceiver chip drives the port at 10 Mbits per second. Don't hold your breath for this baby though: in short while it will only be sold to education or institutions, will cost around £6000 and its other capabilities will be slick.

Also, multi-tasking, multi-user, 68000-based machine - which didn't

make an appearance at Comdex as first expected - is still undergoing development in the States. Being with heavy graphics capabilities, 4 Mb of memory and (as I'd), an Ethernet port will be included.

When asked whether Commodore had any plans for a network system for their new 68000-based line based, a spokesperson replied: "I don't know of any work going on in that direction, but that doesn't mean nothing going on." Send me Commodore.

The new release of Workbench includes limited multi-user support in the form of a new device handler called MUX. By connecting a dumb 63000 terminal to the serial port of the Amiga, it is possible to run text-based programs on the terminal while the Amiga continues to run other tasks. The Amiga treats the extra terminal as a single CSI device and output to the terminal will therefore only appear as text. While this may seem of little use to most people, those who will find it invaluable are programmers. Already Amiga developers can connect the terminal as a debugging tool - the Amiga includes a built-in debugger called ROM-Watch which, once activated, loads debugging information in the serial port even when a program has crashed irretrievably.

FUTURE NETWORKS

The art departments computers, laser printers and Centronics. (If you read last month's Future, you'll know all about these devices). Here at Future Publishing are looking together using an AppleLink network. Although AppleLink can be used for communicating with other networks and sharing expensive hardware, it doesn't let you access files stored on other machines. (We started in obviously desirable, but unfortunately AppleLink is not slow. The two networks transmit data at roughly 28.8K, a second, two pages of 85 Amiga Format text and graphics can consume 200K or more. Consequently Future Publishing's artists rely on the network for greater sharing.



■ A 486 network kit - just plug in the extra hardware and get talking!



PUBLISH AND BE SCANNED

What's the easiest way to get a picture onto your screen? Digitise it, of course. But you don't need to mess about with video cameras and studio lights - Cameron's new Handy Scanners provide instant graphics for the ST and Amiga. And you can read text from the printed page, too! **BEN TAYLOR** scans the facts.

COLOUR BLIND

Although the scanners will scan in black and white images, you can scan colour images too. The output, of course, is still converted into shades of grey, so you'll have to work in the colours by hand later. The scanner seems unable to distinguish between red and white, and between blue and black, so pictures with references of these colours don't scan very well.

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Low-cost digitising has taken off in a big way in the PC world, with hand-held scanners providing a cheap and simple way to get artwork into the machine. Desktop flatbedding, paint packages and even word processing have all been revolutionised. The ST and Amiga, though,

have been lamentably under-served in this respect - until now. Cameron's Handy Scanner range allows you to digitise pictures and read text, quickly, simply and without a video camera.

The scanner is a palm-sized box about 10 by 8 by 3 centimetres. A variable length lead about two metres plugs into an interface box taking the signal to the computer. On the ST, the interface attaches to the cartridge port, and an external transformer provides the power. On an

review models, this power supply unit was supplied conveniently mounted into a two-pin European plug, so you'll need a phasing socket adapter to connect to a standard 3-pin job.

On the Amiga, the interface attaches to the maximum edge connector. The Amiga provides a power supply through this port, so no extra transformer is needed. If you have an A2080, you'll have to take the scanner and your machine apart to get at the relevant slot, but it isn't too difficult.

There are two models of scanner at the moment - Type 2 and Type 3. Both work at 200 dots per inch resolution, but the Type 2 only recognises black or white while the Type 3 can cope with 16 shades of grey, making it much more suitable for scanning photographs. A Type 4 boasting 400 dpi resolution is promised for early in the New Year. Also available in the Carmen range is the 'Personal scanner' - a failed scanner for complete Alphas, but we haven't been able to find this with the IT or Amiga.

Grab that picture!

Only one thing remains before getting down to business - installing the software. Carmen sell their products in Germany, France and England, and

HOW IT WORKS

The Handy Scanners are camera-like devices. A row of red light emitting diodes (leds) shines downwards into the image under scrutiny. The light is reflected back and gathered by a lens and light sensitive cell and the appropriate pixel codes are transmitted to the computer.

The clever part is that you don't have to be particularly careful to move the scanner at a constant speed; a roller underneath the scanner, in contact with the surface being scanned, rotates as you drag the unit along. The processor within the scanner scans the positions and works out how many pixels worth you have scanned. Whether you move at a snail's pace or warp factor 8 you get a reasonable scan.

you have to install your program to get you menus and messages in the correct language. On the ST you just click on MSGEN.PRG the first time you use the scanner, but on the Amiga the installation process is difficult. You have to copy your Workbench disk then run a program from the CLI which needs plenty of disk swaps if you don't have two drives. The manual's instructions are poor, as well as being pretty badly translated from German.

Once you've set everything up, scanning an image is simply itself. Make sure your original is on a flat

The K2000 is an undrained workstation for the power user. Aimed at the growing niche market of video professionals, it is based on the standard Amiga 2000, but includes extra hardware to satisfy the demands of processor-intensive graphics and animation programs.

The heart of the 2500 is a card with a 14 MHz Motorola 58020 microprocessor. A 68881 maths coprocessor comes as standard, with 2MB of fast 32-bit RAM and a 40MB hard disk. Workbench 1.3 is all in the deal.



Desk, Picture, Brush, Text, Bits, Extras
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undrained power user. niche markets. It is based Amiga extra hardware demands of graphics and animation programs.

The 2500 is a card with a 14 MHz Motorola

000 0000
000 0000

Cartoons and other line drawings scan well, even with the Type 2 scanner - original above, and scan below. The outer edges of the screen show the menus of Handy Painter, the paint package supplied.

flat surface, place the scanner over the start of the area and sweep it smoothly downwards. There's a control control to get the best results from a particular image - trial and error is the key.

What does 200 dots per inch resolution look like in practice? The Handy Scanners are 64 millimetres wide, which is 2.5 inches, thus making 500 pixelsworth. Screens are usually 400 pixels vertically, and doing some mental mathematics this means that you get a 2 inch (50mm) image length. This can therefore get a scan area of 400mm by 500mm - not at all big, although you can build up scanned strips into a composite image with the supplied art package - more later.

The magnification factor is disconcerting at first - 500 pixels on screen take up about 8 inches, com-

pared to 2.5 in paper, so things appear three times bigger than life.

SHADES OF GREY

If you've got a black and white monitor, you may be wondering how a scanner can produce 16 shades of grey or 64. After all, most of us have screens that display either black or white, isn't it?

The Type 2 scanner is a simple mono unit, working at 200 dots per inch. Each of these dots has to be either black or white, which is fine if you are scanning something like an etching or a cartoon. However, photographs are not black or white - they are made up of a continuous range of grey shades. When you scan a photo with a Type 2 scanner, the best takes all pixels lighter than a certain shade as white, and darker ones as black. This gives a very unusual effect.

The Type 3 scanner tackles this problem by measuring every pixel and assigning it one of 16 grey shades. Since ST and Amiga screens don't normally support grey shades, the scanner does a subtle averaging operation and converts the grey shades into a block of 4 by 4 pixels which it sends to the screen. 4 times 4 is 16, of course, the same as the number of grey shades, and thus the ST or Amiga's screen can simulate the different shades of grey giving a much better rendition of photos.



■ An original photo of a keyboard



■ Scanned in two color mode



■ 24-gray scale (mode 2)



■ 18-gray scale (mode 2)



■ 18-gray scale (mode 2)

■ The Canonizer Type 2 scanner works in four modes - a black and white scan and three varieties of 18-gray scale scan. The first option is best for cartoons and line drawings, the last three are better for photos - the one you use depends on the photo.

Building up

The main scanning software on both 57 and Image is a painting program, Handy Painter. This only runs on mono-screened 386, although any Image will support it.

If all you want is a single sweep scan - 640x480mm - then life is simplicity. Select 'Scan' from the menu, do the business, and when you're happy with the result save it to disk. If you want to scan a bigger picture, you'll have to scan it in strips and piece them together by hand. Luckily Handy Painter provides the tools.

There are seven 'buffers', or painting areas. Each buffer can be any size you like, memory permitting, so you aren't restricted to screen-size scans. A conventional set of colour-palette functions let you move data between buffers. So, armed with this knowledge, your task is as follows:

■ Work out how many pixels your total scan will take up - for instance, a 11 by 8 photo would need 2000 by 1500 pixels at 250 dpi - and set up one of the buffers to be slightly bigger than this.

■ Make your first scan and copy the scanned image to the large buffer you just created.

■ Make another scan, put overwriting the first, and copy it to another part of the buffer.

■ Using a magnified screen, find two exactly corresponding points on the two scans.

■ By looking at the coordinates displayed, work out the difference in pixels between the two positions, then move the second block so that it exactly matches up with the first.

Repeat this as many times as it takes to build up the entire image. You need to make absolutely sure each scan is exactly parallel to the last or you won't get a proper match.

There are two 'preview' commands to show the complete image as you assemble it, so with images larger than the screen you're working blind.

Once you've got the best image you can, you may need to shrink it down to fit on a single screen, ie, 640 by 480 pixels, particularly if you want to export it for use with other

programs. On the 57, a utility to convert handy Painter files to Segma format is provided - Segma can't handle images bigger than one screen.

As you'll have gathered, it is hard work to build up a good image of a large scanned area, but the results can be excellent.

READING TEXT

But wait - scanning pictures off a page is more than in your OTR package isn't all the Handy scanners can do. What makes them unique, certainly in budget scanning systems, is the ability to recognise text from a mass of graphics. In other words, you can feed it a page of writing, and after a bit of thought it will tell you what the words are. Just think of the potential advantages - if you've got a cupboardful of old archives, you could transfer them onto computer disk and get them into your word processor.

On the system we reviewed, the Handy Painter software was only running on the Image, although Canonizer said the 57 version should be available by the time you read this. 10Mb of RAM is recommended when using Handy Reader.

The first stage is to scan your text page into memory. You must use a Type 2 scanner, or a Type 3 switched to two grey scale mode because you need definite on/off states for the pixels, so only/worthy grey-scales.

Because the scanner width is only 64mm, you have two scanning options: vertical or horizontal. If you are reading magazine or newspaper columns they may be narrow enough to fit in one sweep, so just scan straight down the page. With a megabyte of memory you'll be able to scan a column up to 10lines deep.

However, at 64 pixels a 211 mm across, wider than the 64mm scan head. The solution for a typical typescript is to put the scanner sideways on the page and sweep it left to right - once you've gone the full width the

WHAT OCR IS

In case the difficulty of Optical Character Recognition - reading text off a page - hasn't yet struck you, here's the problem. Since you've scanned a portion of text, you can display it on screen. Now it may happen that what you scanned was a message saying, 'Maurus like honey', but to the computer if you've got it as a pattern of pixels it has no idea what the juxtaposition of one pixel here and another there means when perceived by the human eye.

So, what the computer has to do is take in scanned image and work out what it says. The first thing it does is try to isolate each letter in turn - working words the page it looks for blocks of black pixels on a white background, and takes that to be a letter. It follows that text you can input and be joined up as it, and the printed letters need be of a high enough quality that they are unambiguous.

Once a letter has been found, it is compared with the first data used as a match is found.

OCR software lives and dies by how well it can cope with subtle variations in typewriting, and how well it copes with variation in scanning quality.

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software rotates the image, as though you had scanned a volume 210 mm across-but 64 mm deep.

Once the page has been digitized, you can choose an area of the image and ask the program to recognize it — turn it from a graphic screen into an editable text file.

How well text is recognized depends a lot on the font used — the body text of this magazine is in a font called "News Gothic", which is quite different from the typewritten style of "Courier". Next, Handy Reader comes preset to recognize Helvetica, TimesRoman, Bookman, Typewriter and Digit fonts. You pick the one closest to the style of your document and load the font into memory before starting the recognition program going. Unfortunately, the manual doesn't show you samples of all the fonts it knows, but choosing the right one is critical to good results. "Typewriter" is best for typed documents, "TimesRoman" for book pages... try them and see which works best.



■ The black Type 2 Handy Scanner, and beige Type 3

Look and learn

Your first attempt at OCR is likely to be fairly dismal, with maybe only one character in two being correctly recognized. This is because the input fonts probably don't quite match the one you are reading — what you have to do is teach Handy Reader your own custom typeface.

Starting from the sound of the button hints, you select "Rechar-

acter Table" and

ing wax, and when the BBC are going to go
o the new series of Star Trek."
poete, from Lewis Carroll, is the key to



they had time," the editor said, "to talk of some things, of chess and ship-
building wax, and when they are going to get 10' 10' 10' 10' together and they
to be the new series of Star Trek."
sle, from Lewis Carroll, is the key to
the great literature of the last few centuries have in fact been written.

■ The text recognition screen for Handy Reader. The scanned image is in the top half, and the result of the attempted read appears below.

acter from the menu, and fine tune the recognition process by correcting each suspect letter in a page of the target typeface. The program goes

back to scan an entire page in strips — probably five per A4 sheet — and save them as files to disk. They will probably be called SCAN001 to SCAN005. You can then choose the "Load and Recognize" option which automatically loads each strip, extracts the text from it, loads the read aim, appends the text, and finally saves the complete text to disk. All this happens while you are off having a good time.

The outer limits

So, in the final analysis, how effective are the Handy Scanners at doing their job?

Text recognition is a nice idea, and for a relatively cheap package such systems can run to tens of thousands of pounds is very impressive. However, the Handy Scanner with a too small to be useful. Once trained, the software is quite effective — if you were to invest in an A4 flatbed scanner and hard disk you would get a genuinely useful system.

As to general image scanning, without doubt you should go for a scanner with pre-scanned support — our review Type 3 model will have been upgraded to the higher resolution Type 4 by the time you read this. The extra flexibility of scanning photographs is well worth it. The control controls on the scanners are very sensitive, and you'll be able to get near-perfect images out of a cartoon or simple line drawing using either mode. The maximum 64mm scan width is small, and it's a pity that there aren't simpler commands for putting several scans together into a larger whole — it's a shame with the primitive editing provided, and the manual isn't very good.

Overall, a Handy Scanner definitely offers a cost-effective and productive way of importing graphics or text into your PC or Amiga.

IN-FRIMING

When you make a scanned image — particularly if it is a shaded grey-scale image — you tend to get "Moire patterns" (you should've known if the main factor is not an exact fraction, say 25%, 50% or 75%, Handy Painters offers a nice feature called "Pattern Jitter" which recovers the grey shades in a picture to smooth it out within its new dimensions.

Features

0 1 2 3 4

performance

0 1 2 3 4

cost of use

0 1 2 3 4

reliability

0 1 2 3 4

format value

0 1 2 3 4

for

- Compact and simple to use
- Unique OCR software does typing out
- 2 types of grey-scale for photos
- Can assemble images larger than screen size

against

- OCR software needs hard work for best results
- Small scan limit
- Manual and installation hard work

Full page makeup

With A4 Pages being 21 cm wide, you will typically only be able to scan a 64 x 210 mm strip at a time. This small area won't contain much text, so Cameron have provided a kind of built-in processor to speed things up.

Scanned areas of text can be saved to disk in image form, so the



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 6. **Discussion**
 7. **Conclusion**
 8. **References**
 9. **Appendix**
 10. **Index**
 11. **Abstract**
 12. **Summary**
 13. **Key Words**
 14. **Keywords**
 15. **Keywords**
 16. **Keywords**
 17. **Keywords**
 18. **Keywords**
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1990	1.0	1.0	1.0	1.0	1.0	1.0
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1993	1.0	1.0	1.0	1.0	1.0	1.0
1994	1.0	1.0	1.0	1.0	1.0	1.0
1995	1.0	1.0	1.0	1.0	1.0	1.0

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STATE SIDE STORY



Wondering about the future of the new Atari ST or Amiga computer you just bought? Check it out with the American market. MARSHAL M. ROSENTHAL, our tireless (mostly) contributing reporter, has gone on a safari around the United States to bag the answer for you.

Lets start off with good news—both the Atari ST and Amiga are doing well though not great here in the States. And success breeds success—software houses don't bother making products for failing systems.

One of the most successful producers in the US is Lucasfilm Ltd.'s Games Division, one of the most successful in the US. Starting from their first entry, *Ballblazer*, on to the most recent *Jan MacTracker* and *Alone in the Dark*—all their games have been clever and innovative. But they've never made any appearance on a 68000-based machine. "Until now," says David Fox, software designer and project leader.

Fox has been with the Lucas Games from the start, and knows what proper programming can do to enhance a product, even when it was originally designed on another computer. "We will shortly be making its Amiga debut, and the ST won't be far behind," laughs Fox. "There are enough machines out there to justify



■ David Fox of Lucasfilm's game division. A couple of their titles are on the other page. ST and Amiga users can expect solid support.

the conversions—and we're taking full advantage of the better and simpler sound capabilities. 'Additionally,' says Fox, "we'll be releasing a good number of new programs on the Amiga and ST in 1989—we plan to become a strong part of the software for these computers."

Agreeing with that is A.J. Reiber, head of LSI's product development. "It takes time for a computer to become strong enough in the field to attract software houses," he remarks. "The ST used to be troublesome because of the single versus double-sided drive business; multiple disk costs were annoying and a packaging problem. But Atari addressed the issue by dropping the single-sided drive." "Meanwhile," says Reiber, "the 3.5" disk is now becoming a standard, reducing duplication costs as well. All this adds up to a greater viability in the health of both the ST and Amiga."

A pint in a quart bottle

Chris Crawford gladly listens to any one advocating the opening of doors for 68000 programmers. He was one of the first game designers to devote

the advice of marketing personnel on what would and wouldn't sell to the public.

The results over the years have been impressive. Such programs as *Eastern Front 1941*, *Balance of Power*, and *The Legend of Koolha* have shown him an uncompromising purveyor of games that push past the new boundaries of most things. Crawford sees the complexity of software as the main issue facing the future of these computers.

"Just ago," he says, "machines had a total of 48K to play with. To make do with that required squandering every last bit out of the code. Of using assembly language, there are huge plenty of rooms, 128K, 512K etc., and there's no impact to fill it up. We're left with a big empty house that echoes with 48K games. Or at the best, a number of 48K modules combined together."

"There's a real need in games for believable characters that provide human values," Crawford says. "Forget about city entertainment and huge manuals—programs need to have substance, and it won't happen until sometime the hardware slows more brains. Designers need to be aware of this because the audience doesn't really know what they're missing. It requires thought and consideration on the part of game designers, and they can't take the easy route out by making stupid meaningless games, even if they sell. The fact is that the potential is waiting here, and it needs to be exploited."

From the horses' mouths

Meanwhile over at *Power Without the Price* (B.™ etc.) themselves—Bingo continue to be fairly low profile.

1040S ON THE ROCKS?

"Buying rock" picks up Bruce Mandel's story. He works for Park Avenue Values in New York, a dealer for the Atari ST line. "The 1040S is selling real well, especially as we 1040S's can be had anywhere," he says. Mandel agrees with Crawford about the demand for greater and greater memory. "People used to be satisfied with 64K, 128K—but now they just can't get enough." Mandel estimates ST software sales as being doubled roughly since the middle, with 50% going towards desktop publishing and word processing, the other half being arcade and role-playing games. "The ST is a strong contender since you get such the negative gaming only Atari image," he says. "It would be nice if Atari advertised a lot more so that people know just what the ST could do."

In a side note, the store has been carrying ST Amiga format magazines since *Cybernet* (Mandel notes that, "The only girl in 25 copies, and they disappear real fast").

However, new products are appearing. The Mega file 3D has been replaced by a new 30MB model - there's a 60MB version appealing for those really big users - and there's a new 1280 ops models for under \$1800.00. Atari's move to dealer-only retailing, seems to be paying off, clear support and word of mouth is making more people aware of just what the ST line is all about. Atari is also out to gather more attention through their 5.0M 804 Laser Printer which costs its low cost to a more design that supports it. "We're out to shatter the myth that high-performance design publishing has to mean a high price tag", says Atari Corporation President Sam Tramiel. Not an easy run to reach, Tramiel goes on to note wholeheartedly that handling Mega 3D with the Laser printer is extremely cost effective, but that paying less doesn't mean getting less.

Much more accessible is both Message, Manager of Market Development - Amiga Products, from Commodore. Such a title may be a little long for a business card, but Message accepts the responsibility and inevitability of a future laden with increasingly more sophisticated software as a result of the attractiveness for the Amiga. "I see a greater commitment towards both graphics-intensive use and Desktop Publishing" he says. Commodore has put their money where their mouth is by releasing version 1.3 of the operating system, as well as two new versions of the 68000. The 2000HD includes a pre-installed 68000 drive, and the 2500 uses the same with 2 MB of RAM on a 68000 32 bit processor and 68881 math co-processor. "That's quite a mouthful," grins Message, "but it shows just how committed we are to fulfilling the needs of graphic intensive programs. Plus there's a lot of 3rd party hardware developers out there waiting in the post."

Too much of a good thing

Expert Services of Kentucky echoes that feeling. Vice President Terry Terrio says it's hard keeping up with the demand for Amiga 2000's - but you can tell he's not really complaining. He also notes that more and more users are interfacing their Amiga's with video, and that animation programs and font sets like GEM, Tardis are being stepped up. "Thanks to Progression Peripherals EmulationKit we're so popular that they want to fly off the shelves," remarks Terrio.

Meanwhile Coyo Software is on the move - literally as well as figuratively. In Jim Miller, Vice-President of Product Development, watches his desk being carried off to his new office in the expanded space next door, he comments, "We're making a huge commitment to the 68000 stan-

dard." This calls to attention the fact that Coyo not only markets U.S. 6800 ST products in the States, but has also combined forces with the French software House Indigeparc. "The

the 68000 machines, the Atari ST and Amiga, will be around for a long time. It's also evident that the software designers, as well as the companies producing peripherals, are



software for the 68000 computers lets you create in ways that just couldn't be done on the 6800 machines. More and more new products are being designed to take advantage of the superior graphic abilities, not to mention the greater storage on disk." Miller states also that this is the beginning of the end for conversions - products on the 68000 computers will be oriented for them, rather than ported over. "Besides a greater richness, I see new categories of gaming entertainment opening up as a result," he says.

Broadbased quality

Bill Williams is a case in point. A software designer with such games as *United and Mercenary* to his credit, his latest release is an Amiga mode adventure called *Power Player* (Pittic Software, in Montreal in the UK) - it's also the first one to run in the 4.006 colour Mode "r". Mostly graphic mode 68000, Williams sees the continuing success of the Amiga falling into the hands of designers like him, who must produce entertainment that is challenging as well as fun.

"Everyone is trying for graphics that look as good as broadcast television, and sound like a movie video," "But," Williams states, "by trying to emulate other mediums, computers ignore their real potential. Software can never become another *Gloss* with the kind unless it develops some emotional content, and stringing some events together and calling it an interactive story is silly - you have to do a lot more than that. The games must involve the player on an emotional level, so that there's an interest in the characters and what happens to them."

So what happens next? More software, hardware - more blurring of the boundaries between what could once only be done conventionally and has now become the province of the computer. There's really no question that

looking ahead into the next century with open eyes, and a desire to excel. But what exactly is going to happen? What and how. After all, 1989 AD is just around the corner.



■ The 2000 - new 68000-based top of the Amiga range

TAKING ON THE MAC

David Small (Design by Small) takes a different tack on programming. His *Spacely 130* cartridge enables on April 27 to introduce an Apple Macintosh 68 - who stands around the 68000 microprocessor - new letter simulator. Some might remember his previous *Off the Computer* (Pittic) from which he has updated with the release of the New 1.000 68000. Small says he has an exciting agenda for the computer - enhancing it, and moving beyond.

"There's a special feeling I get from using it," he says. "Competition on this system to you, you can't win with it, it is a work, but the beauty of it is that you can't get a little better." To Small, supporting the 68000 computer means being good for all of them. He says this point is one that can compete more people into buying and using 68000 machines.





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a Purple Saturn Day - ST & Amiga

ST

ST PURPLE SATURN DAY

You've seen the movie, you've read the advertisement, now experience Purple Saturn Day for yourself. Format and Intergames have joined forces to bring you this mega demo.

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Realise the potential of your ST within the modern, electronic office with this powerful database system. Organise anything from your Antbirds breeding business to the local parish records.

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Who says the ST can't handle smooth scrolling? Take a look at this program and you'll soon change your mind.

ST MESSAGE

At last! All the Desktop functions you'll ever need in one amazing program. Forget your file copiers and your disk formatters, MESSAGE does the lot!

ST SCREENS

We've got a bumper collection of cheats for you this month, SD is in fact. Set weeks and get the best of CLUE, Thundercats and others.

AMIGA

AMIGA PURPLE SATURN DAY

Yes, Amiga owners too can enter the magical world of Intergames. Purple Saturn Day with this month's great cover disk demo. Set back and be amazed.

AMIGA SCENERY

Explore the fascinating world of fractal graphics with your Amiga. Just sit back and watch as a whole new world unfolds before your very eyes!

AMIGA SCREENS

Need a screen grabber? A screen printing program? How about a clipart? A free RAM display utility? Screens has got the lot!

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Never again will you loose an item of software because of virus infection. Keep those critical bootblocks, then away for safe

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A great little program for the CLUser among you. Whether you're a hardened hacker or just starting out with the CLI, CLI Help will give you all the information you need at your fingertips.



a Fractal Screenery generator - Amiga

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We're looking for good quality software to fill our cover disk each month. If you're a fully programmer you could earn big bucks from your labors - games, business applications, utilities, or anything of general interest.

Turn to the end of this section for more details on how to get your software onto the Format cover disk.



THE FULL VERSION

Purple Saturn Day for costs £24.95 on both the ST and Amiga and is published by Intergames. Both versions should be available by the time you read this.

PURPLE SATURN DAY

All colour STs and Amigas
FILES: PURPLE.PRG, several .NEC files

Intergames had a problem: what on earth could they do after the mind-blowing success of Captain Blood when we see the follow-up, Purple Saturn Day, we seem so impressed that we give it one of our cover Format Gold review awards this month. And we just had to get a demo so you could test for yourselves.

Once every year, the stars above Saturn give with a mysterious Purple radiance. This unusual phenomenon is the sign for all the peoples of the neighbouring systems to converge on the ringed planet for the annual galactic olympics. You have been chosen to represent the peoples of the Earth to defend the honour of the human race.

The opposition is tough though, asroids barred in the order of the day. The devilish tactics used would even have less Johnson throwing his hands up in horror. You must compete against 16 other finalists through four levels of increasingly difficult gameplay for the ultimate prize, a kiss from a beautiful alien maiden.

In the full game - reviewed this month on page 52 - your first challenge is the Ring Pursuit which takes you into the hazardous reign of the planet Saturn itself. You'll need quick reactions and a keen eye to avoid the massive chunks of frozen rock and ice that hurtle towards you at a terrifying speed. Next up is the Tronic Slider challenge which has you racing around an intergalactic arena collecting energy balls.

Third is the Chain Breaker Challenge. The action is set on a large alien brain that has ceased functioning. Your task is to get your half functioning again by connecting all the chips together so that the brain pattern finds freedom of movement. Your opponent, disgruntled by your progress will continuously wander across into your half and attempt to destroy your hard work.

To save you the emotional trauma of being responsible for the human race's dignity, you don't actually have to do anything stressful in this demo. Just hang on to your hat and watch the stunning graphics of Purple Saturn Day.

Both ST and Amiga versions will automatically run when you insert your machines with your cover disk in the internal drive.



SCENERY

Public Domain
All Amigas

FILES: SCENERY, SCENERY.DOC

Designing planets is a complicated business. What with mountains, rivers, valleys and seas, creating a whole new world can be a time task indeed. If you're a would-be Dornberthist remember the lovely bits round Norway, Himmeler land? and you're starting to feel this creation task is taking it out of you, then let your Amiga do the job for you.

Scenery is a program that uses some very complicated mathematics to create some very interesting results. The program uses fractal graph techniques as used by super computers such as the Cray to create random landscapes of almost unbelievable realism. Fractal techniques are used extensively within the film industry to create graphics for sci-fi films such as Star Trek. If you've seen any of the more recent blockbusters, chances are that the asteroids and other planetary objects were created on a super computer using fractal graphic techniques.

The landscape generation takes a random number as a 'seed value' which can either be randomly generated or chosen by you. Seeds of 3000 onwards seem to give interesting results. Other options include the ability to increase the height of the 'current' from zero right up to 8000 feet. The water level and the height of mountains and hills can also be selected from the pull-down menus.

Landscape generation is reasonably fast when you consider the Earth took millions of years to get to its current state! It can take as little as two minutes for a scene to be rendered - impressive when you con-

sider the complex maths is fractals. Once a landscape has been created, selecting 'Save Screen' from the Project menu will save the screen as an format for loading into a paint package such as Deluxe Paint or Aegis Images.

You can load Scenery either by selecting it from our cover disk menu program, Click_Me or by alternatively clicking on its icon on the Workbench. Instructions are available within the Scenery channel.



ST

First, copy and load the disk as described at the end of the Disk Entry section.

DATABASE CONSTRUCTION SET

By M. Montgomery
Colour STs only (medium res.)
only
FILES: DATABASE.PRG,
DATABASE.DOC



Of all the different types of computer program that writes, the Spreadsheet, Word Processor and the Database have undoubtedly become the most popular. Throughout the world computers of different shapes and sizes, and of varying complexity offer these three basic types of program more form or matter. You don't need a degree to guess what class this month's cover disk program falls into.

Database Construction Set is a powerful dBase-based database man-

agement system that boasts some impressive features. The program can handle up to 500 records in memory at any one time and a maximum of fourteen fields, all from a friendly GEM environment. You'll feel instantly at home with the Database construction set.

Once you've decided on your file format, Database Construction Set offers a whole host of tools for managing your data. Tools include sorting on any field, fast searching from any field and many others.

Before you attempt to use the program, the first thing you must do is to copy the database and its related files to a separate disk. (To copy DCS, drag the Database folder from its window onto the disk it can and follow the disk copy requests.) The program will work fine from our cover disk but as soon as you create a new database or edit the demo file, Database Construction Set will attempt to write to the cover disk which could corrupt our special disk format.

Full instructions and a demo database are included within the database folder. You may find the demo database of particular interest as it lists all systems that appeared in issues 1,3 of Format.



MESSAGE WRITER

By G. People
Colour STs only
FILES: MWRITER.PRG,
MWRITER.DOC, TEXT,
COLLAGE

Calling all home video buffs! Have you ever fantasied using your ST for video filing but just couldn't find the right software? Look no further, Message Writer is here! Just type the text to be displayed and sit back and watch as the results are scrolled smoothly across the screen in a super high resolution font.

Even if you aren't involved in home video, Message Writer should still be of interest to you. Whether you run a shop or are trying to sell your gear, Message Writer will give you that added advantage that will get your message across.

Using Message Writer is simple to install. When you run Message Writer, the text to be displayed is read from a file appropriately called TCG. By loading this file into a text editor,

SCREENX

Public Domain
All Amigas
FILES: SCREENX,
SCREENX.DOC

It's the saying goes, "The small ones are the best," and that's certainly true of ScreenX. Hidden behind its seemingly big Workbench window is a myriad of wonderful features for all Amiga owners, from the most experienced machine code programmer to the casual Workbench user - everyone can benefit from ScreenX.

ScreenX is a collection of handy utilities bundled into one compact package. When you first run it, a tiny window title bar will pop up onto the Workbench screen displaying all sorts of useful information such as free memory and the time. To get into the program's proper use, first click the left mouse button on the ScreenX bar to activate it, then click the right mouse button also in the



the title bar. The ScreenX screen will disappear.

All your active Amiga screens are listed out. For instance, you'll have a screen for ScreenX, a screen for the Workbench, and maybe a screen for the CLICK/ME menu program if that is running too. Click on the screen name to select it, then by

choosing the appropriate item, you can dump the screen to an RT image file or to the printer, you can kill the screen to recover its memory - or just get information about the screen (its size and number of colours - handy for programmers).

Full instructions are included in the program drawer.

SCREEN FACTS

Amiga programmers may be confused by the idea of a screen. Programs usually open a private area of memory for their own display purposes, but since the Amiga is multitasking there might be several 'display windows' open at once. Think of these as being stacked up on top of one another - you only see the top one. Use the left mouse key and R to flick through the stack.

ScreenX gives you info about all active screens - not about all active programs. If two programs share a screen (eg. two CLI tasks outputting on different windows on the same screen) you'll only get one entry in ScreenX.



ST message writer.

KEYS

Undo	reset cols
Space	pause
Escape	quit
Cursors	chang

■ Message writer (ST)

you can reformat the text to your heart's content. Different effects can be achieved such as changing the symbol type, underlining text and others by simply inserting control sequences within your text file. These control sequences are listed with the program's documentation file.

You can run Message Writer by either clicking directly on the M_WRTT- (LB)PG icon. Alternatively to give the old mouse button a rest, Message Writer can be run by clicking on the Message Writer icon on the desktop. Full instructions are available within the M_WRTT- (LB)PG folder.

DOSACC

By L. Kneeling
All STs
FILES: DOSACC,
DOSACC.PRG,
DOSACCLABEL,
DOSACC.MNH

So you've got a disk formatter ACCO-

copy, a free memory add-in, a file copy accessory and a whole host of other accessories. Still all these have loaded, what else have you got? No free memory and no more space for more useful accessories? If you

don't use GC STARTER that is!

DOSACC is just bursting with features. From just one program you can have free memory and disk writer, date and time setting facility, a fast disk formatter, a file display utility, a file copier, full featured file management and a whole host of other wonderful features.

DOSACC, as the name suggests, is a desktop accessory and will not therefore run from the Desktop. To use DOSACC, copy the files DOSACC and either DOSACC.LABEL or DOSACCLABEL depending on the resolution of your machine, to the root directory of your boot disk. If you've got a high resolution monitor then DOSACC.LABEL is the one to use but otherwise DOSACC.LABEL will do the job.

Once copied, reset your ST and DOSACC will automatically be loaded into the desktop by GEM. The program can now be run by selecting it from the DESK menu. Complete



■ DOSACC (ST) giving you the rest of the day

DON'T GET LEFT OUT!

As you may have noticed, we often refer to programs published in past issues of Format that unless you've been with us since issue one then you could have rather left well if you want to get your hands on any of our back issues then you'll be surprised to know you can still buy past issues at their original cover price. Write to: ST Single Format Back Issues, Futaba Publishing, The Old Barn, Somerton, Somerset BA11 7BY.

CRUNCHER

Public Domain

All Systems

FILES: CRUNCHER, CRUNCHER.DOC

Errors are never quite big enough, are they? Here's a great program which takes your program files and crunches them down so you can cram more on to a disk.

File compression utilities are certainly nothing new, and look in the PD libraries and you'll find a whole host of different utilities all claiming to be the best available. The disadvantage of nearly all these file compressor utilities is that a compressed file is of no use to anyone unless it is passed through a decompress program. Cruncher, however, is different. Just crunch your program and that's it, no decompression programs required. When you try to run a program that has been compressed, this loader will automatically carry out the process of decompressing before your very eyes as it loads the program into memory. The program then runs normally after a couple of seconds wait.

Cruncher crunches program files

only; it cannot handle data files such as text from a word processor.

Cruncher works both ways - if you ask it to crunch an already crunched program, it will clearly realise that and de-crunch it for you. This way you can recover the originals from crunched versions.

Full instructions on the use of cruncher are available within the cruncher screen.

FILE CRUNCHER.DOC BY WORM CRUNCHER V2.1.191



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CHEATS

By C. Kingsley and L. Doughtyshire
All STs
FILES: ELITE.TOS, ICECHEAT.TOS,
NEBULUS.TOS, THUNDER.TOS,
THUNDER.TOS, ZYNCHHEAT.TOS



Who says cheating is unfair? When the fate of the universe is at stake, there's no option but to use every tactic at your disposal to play the advancing alien hordes, mutant tomatoes and armadillo steamrollers both doing unspeakable things to your pet doggie. A little bribery now and then is a small price to pay to bring peace and justice to the universe.

This month's cheats are for *Elite*, *Beyond the Ice Palace*, *Thundercats*, *Zynch*, *Nebula* and *Thunder*. Most include full instructions within the program itself but if you're baffled by the text, we've included a short documentation file within the cheat's cheats.

Instructions are available within
DOSACC files.

AMIGA

First, copy and load the disk as described at the end of the Disk Extra section. These programs run on all three Amiga models. We have been unable to test them on the early version of the Amiga 1000.

BOOTSAYER

By S. Warden
All Amigas
FILES: BOOTSAYER, BOOT-
SAYER.DOC

One of the most annoying traits of virus programs is the damage that they can inflict on games and other protected software. If you've ever lost a game due to virus infection, Bootsaver will be of great interest to you.

Most commercial games have special copy protection which in the form of "custom boot blocks", which tell the machine how to load the game. Unfortunately viruses tend

virus killers tend to work by altering these boot blocks, and this will usually trigger the copy protection and prevent the game loading even though the actual program itself is still intact.

Bootsaver is a simple utility written to recover from such an event. The program works by reading the first two sectors of a disk (the boot block) and storing them in a file. If the unprotectable hoppers and the boot block of a game disk becomes corrupt, by simply reading the boot block file back from disk and then rewriting it to the corrupt disk, the game can be restored.

If you own a large collection of games then it may be a good idea to protect your investment by keeping a library of all the boot blocks on a separate disk.

You can load Bootsaver from either of your disk menu programs, Click Me, or by clicking on the Bootsaver icon on the Workbench. A full description of the technical ins-and-outs of the program complete with a tutorial are available within the Bootsaver drawer.

CLI HELP

By S. Henry
All Amigas
FILES: HELP, HELPA.HELP,
HELP.DOC
Fighting your way through the virus

plagues of the Amiga's Command Line Interface (CLI)? Are you baffled by buffers, flopped by the files and confused by the commands? Do not fear, CLI Help is here!

CLI Help is a handy little program that provides online help facilities for CLI users. Whether you're an experienced CLI'er or just starting out, CLI Help can provide you with instant information on any CLI command at the touch of a button (well, a couple of buttons to be honest).

Before you can use this incredibly useful utility, you must first install the program on your CLI disk. The file HELPA.HELP must reside in the C: directory of your local disk and the file HELPA.HELP must reside in the top level or root directory of the same disk.

To use CLI Help, enter the CLI Help command, which is followed by the name of the command you require information on. For example, to obtain information on the DIR command, you would enter:

HELPA DIR

Due to the fact the CLI Help is CLI based and needs parameters to function correctly, the program cannot be run from our compact disk menu or from the Workbench. This program is aimed at those of you who have a certain amount of experience with the Amiga's CLI environment. Full instructions are available within the same drawer as the program.



CLI help offers Amiga users memory joggins

HAVING TROUBLE WITH THE DISK?

We have done our best to check that the programs supplied on this month's disk are simple to use, error free and have no known viruses. However, we cannot answer telephone queries on using the software, and we do not accept liability for any consequences of using the programs.

If your ST Amiga Format disk is faulty - and out of 40,000 duplicated copies are unfortunately bound to be - you should send it back for a free replacement to:

ST Amiga Format February Disk, (Bulfinch Lane, 30 Gayle Close, Bracknell, Berkshire RG4 0ET).

Official warning: If your Amiga refuses to accept the disk, by using the DISKCHECK utility on your Commodore Workbench disk to remove it before sending off for a replacement. We covered DISKCHECK fully on page 66 of Issue 5. Don't worry if every third gives you a "hard error", this is the Amiga being unable to read the ST software on the disk.

HOW TO USE THIS DISK

The ST Amiga Format cover disk is a special format disk which both the ST and the Amiga can read. Even if you are a seasoned computer user, please read these instructions carefully or you could permanently damage your copy of it.

The first thing you must do is make a backup copy of the disk. Because of the special format, the normal double-click copying methods, as recommended in the Amiga and ST manuals, won't work. Indeed you will need to format a blank disk and copy the files individually. Don't panic, this isn't as difficult.

ON THE ST (assuming a single drive machine)

1. Take a blank disk and format it in the usual way.
2. With the blank disk still in the drive, double click on the A: drive icon to open up the Start/Contents window.
3. Now drag the icon for drive B into the open window of disk A. This will copy all the files one by one off the master disk to your new disk. Make sure that the master ST Amiga Format disk is write protected (the sliding tab should be back so the hole is open) and put it in the disk drive when asked for disk B.
4. You will now be prompted at various times to insert disk A and disk B while copying takes place. There will be a lot of swapping to do on a single drive ST! Disk B should be the master disk, disk A your newly formatted copy.

If you want to cut down on disk swaps, you can use the External RAM disk program provided on issue 1's disk as an intermediate step.

ON THE AMIGA (assuming a single drive A500)

1. Start your Amiga up with your normal Workbench boot disk.
2. Take a blank disk and initialize it in the usual way.
3. Make sure that the master ST Amiga Format disk is write protected and put it in the disk drive. Double click on the disk icon that appears. Drag any icons you see in the contents window onto the 'Root' disk icon.
4. When the disk activity light has gone out, put your newly formatted copy disk in the drive instead. Double click on the RAM drive icon to open its window, and drag program icons

from that onto the new disk icon. This copies the files one by one.

The programs may not all fit in the RAM drive at once on an A500 - do whatever fits, then after step 3 delete them from the RAM disk by clicking once on each one, holding the right mouse button down, selecting discard from the Workbench menu. Repeat steps 2 and 3 for the rest of the icons.

USING THE PROGRAMS ON THE ST

When you turn the ST on and put your working copy of the disk in the drive, you will see a window opened with the contents of the disk displayed.

One of the icons is called **CLICK_ME.PRG** - just do what it says, double-click to run it. Up comes a list of the disk contents. Type the number of the program you want to run, and you are asked whether you want to read the disk help file or not.

You will now be asked whether you want to run the program or not. As an alternative to using **CLICK_ME.PRG**, if you know enough about DEM you can click directly on the icons for individual programs. These normally end .PRG with their documentation files having the same names but with .DOC file type. Always read the documentation before running the program.

ON THE AMIGA

Most of the programs on the cover disk are run from the Workbench, which must be loaded first from your normal startup disk, as described in

the Amiga manual. Once at the Workbench, put the ST Amiga Format disk in the drive and double-click on its icon to open it.

You should find on the disk an icon for a program called **CLICK_ME**, do exactly what it says and after a few seconds your cover disk menu program will have loaded. If you own a single drive Amiga then your machine will prompt you to swap disks a couple of times before the menu is loaded, just follow the on-screen instructions and everything should load fine.

Most of the programs on the disk can be executed from **CLICK_ME** by selecting them from the menu and choosing either to view the program's documentation or load the program. If a program fails to load from this menu (this sometimes happens through shortage of memory on over-expanded systems), you can load it from the Workbench instead, by clicking on its icon.

To load a program from the Workbench, you must first click open the drawer which contains it. For detailed comments from the program's author click on the .DOC file icon in the same folder. To run the program click on the main icon.

When you click on a documentation file, a new window is opened and the text is displayed a screenful at a time. Press any key to move from one screenful to the next, or click on the close gadget in the top left-hand corner of the window to cancel the display. The **READ_ME** icon gives you a brief summary of the disk's contents and how to use it.

WE WANT TO GIVE YOU MONEY!

1. If you've got any programs for either ST or Amiga which you think other readers would find useful, interesting or amusing, we'd like to know. Here's how to go about sending international forms for yourself:
1. Only send in programs on 5.25" disks; we cannot accept printed listings.
2. Make sure your disk is clearly labelled with your name and address and the program name(s), and is marked "ST" or "Amiga".
3. Make sure there's a documentation file on the disk called **READ_ME**.
4. Include a clear covering note explaining what the program does, and if you possibly can please also send a printed or in-disk documentation file. Remember your address and telephone number (include a stamped return envelope for the disk if you want it back).
5. **THIS IS IMPORTANT:** there must be a signed note that the program is yours and that you are prepared to assign publication rights in ST Amiga Format. Use the following wording:

I, _____, do hereby assign publication rights in ST Amiga Format, for the following wording:

The program(s) (write the title here) to be submitted for publication by ST Amiga Format magazine. It is my own work and has not been submitted for publication elsewhere.

Signed ...

If we accept your program, we will get in touch with you before publication to agree terms and payment rates. We will evaluate all submissions in a batch once a month, so please allow up to 40 days for return of your disks.

6. If you send us a disk with a virus on it, we reserve the right to send round the heavy metal in the small hours and its unpleasant side to your pet computer. Seriously, since we're already supplied Virus-killer programs (in issue 1), do check your disks very carefully.

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WHAT WE'VE DONE

Using our Cameron Handy Scanner, we've digitized a fascinating picture of our favourite colobates and "enhanced" it in an art package with some appropriately placed peripherals.

WHAT YOU DO

Simply study the two drawings reproduced on this page. You'll find that their subtle changes have been made to the second picture – when you think you've found them all, list them on a postcard or the back of a sealed envelope; for example, you might write "Has two heads" as one of them.

Finally, add to the postcard which machine you own, ST or Amiga, send it off to us at Cameron Scanner Competition, ST Design Format, 4 Queen Street, Bath BA1 1JJ and keep your fingers crossed. Easy really.

WHAT YOU WIN

The first two entries duly accepted from the editorial basket on Tuesday 21st February – one for ST and one for Amiga – will win a complete Type 3 Cameron Handy Scanner system for their machine. Have a read of this month's review starting on page 24 to see what you'll get – not only a superbly grey scale image scanner, but a handy set of optical character recognition software to save you a lot of typing trouble. (Each kit is worth £350 at retail prices.



WHAT YOU CAN ONLY JUST READ

1. All entries must be received by post and on Tuesday 21st February 1985.

2. The editor's decision is final, and will not be open to challenge.

3. Employees of Future Publishing and Cameron may not enter the competition.

4. Armadillos and other colobates may not enter, as they would have no other advantage in spotting the differences.



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HARDWARE



SPEECH SYNTHESIZER

Do you feel lonely? Wouldn't you like an understanding voice to talk to you once in a while? **ROBERT PENFOLD** explains how to add a speech synthesizer to your ST - or indeed any computer.

AMIGA MIDI KIT

The Amiga MIDI interface, our last do-it-yourself project, is still available from Magenta Electronics. It offers MIDI IN, MIDI and three OUTs, all in an elegant case for less than £100. Contact Magenta at the address for this month's kit, and get Personal Tech issue 5 for construction details.

VOICE BREAKING

There can be little doubt that in terms of quality the best speech synthesizers are the ones which give back complete sentences of a digitally recorded voice. Unfortunately, apart from the expense such systems require large amounts of memory even if only a few short sentences need be stored.

There are two common alternatives. One is to store a number of digitised common words in ROM and build sentences up from them, but the vocabulary is usually so limited that the results are less than convincing.

The second method is really an extension of the 'cut and paste' technique, but the digitised speech is only basic words such as 'yes' and 'no'. Provided there are enough of them, any desired words can be made up. You need to have some understanding of the tactics of speech to get the best from this system, and although results are something short of full the simplicity and versatility of these speech units makes them an attractive proposition. The basic words are stored in ROM in the speech unit, and quite long sentences require no more than a short program plus a few dozen bytes of data storage at the computer.

One thing the Amiga can boast which the ST lacks is a speech synthesiser - the ability to take a string of English text and speak it aloud. As it stands, on the ST it is just about possible to produce speech (as games like *Captain Blood* do by using digitised samples) but it needs a lot of expensive hardware if you are to capture your own

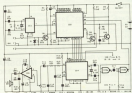
words.

This add-on speech synthesiser for the ST gives it something close to capabilities of the Amiga. It may not always pronounce words just as you would like them (even allowing for the American accent), but it is capable of remarkably good results given a lot of

thought, and can handle any English word or sentence.

Speaking volumes

The ST Amiga format speech synthesiser is a box which plugs into the serial interface (modern part) of the ST. You can then use a programming



■ Figure 1: The circuit diagram for the technically minded. IC1 is the speech chip, and IC2 is a small power amplifier that enables a miniature loudspeaker to be driven at reasonable volume.



language to send commands to the unit which will dutifully speak to you through its own speaker - it doesn't use the ST's own sound chip at all.

In fact, the speech unit will work with any computer which has a serial interface, and that includes the Amiga of course. (Despite the possibilities using multitasking - you could get the Amiga to talk to itself, one voice through the internal synthesiser, and one through the external board).

The speech box could have been designed to connect to the parallel or serial port of the ST - since many people will already have a printer connected to the Centronics, the serial port seems a better bet. The synth is powered from an internal battery as there is no convenient (and safe) way of tapping power from the ST itself.

Building the unit

Details of the printed circuit board are shown in Fig. 2 - assuming you've bought the kit from Magenta Electronics (see the parts list elsewhere) all you have to do is identify the components, bend their leads to fit into the corresponding holes on the board and solder them in place.

A warning about the integrated circuits: apart from IC3 they all require anti-static handling precautions. This boils down to fitting integrated circuit sockets on the board first of all, and not plugging the ICs in until everything else is finished. These MOS integrated circuits are usually supplied in some form of anti-static packaging (such as conductive foam or plastic tubing). Leave them in until it is time to fit them into their sockets, and then handle them as little as possible. Obviously you should keep away from any sources of static electricity when fitting these devices.

The pins of integrated circuits are usually played out slightly, making them difficult to plug into their sockets.

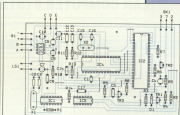


Figure 2: Slot the components fit onto the printed circuit board supplied with the kit. Refer to the Parts List later on for which code corresponds to which component. Push the component leads through the holes so that the wire poke out of the copper side of the board, then solder and trim them.



Figure 3: How the completed circuit board looks with its connecting leads.

ers. Pressing the rows of pins against the top of a table to bend them is slightly can make them much easier

to fit. Make sure all the pins are going into place before pushing them home - buckled pins can easily snap off as

THE ALLOPHONES

Dec no.	Hex no.	Allophone	Sample Word	Dec no.	Hex no.	Allophone	Sample Word	Dec no.	Hex no.	Allophone	Sample Word
0	0	PH0	15ms pause	33	18	SH1	sh	44	2C	NO	no
1	1	PH1	15ms pause	34	19	SH2	sh	45	2D	LL	less
2	2	PH2	15ms pause	35	1A	SH3	sh	46	2E	WH	what
3	3	PH3	15ms pause	36	1B	SH4	sh	47	2F	SH	shape
4	4	PH4	15ms pause	37	1C	SH5	sh	48	30	WH	when
5	5	ST	ST	38	1D	SH6	sh	49	31	PH	pet
6	6	ST	ST	39	1E	SH7	sh	50	32	CH	change
7	7	ST	ST	40	1F	SH8	sh	51	33	SH	sh
8	8	SH0	sh	41	20	SH9	sh	52	34	SH	sh
9	9	SH1	sh	42	21	SH10	sh	53	35	SH	sh
10	A	SH2	sh	43	22	SH11	sh	54	36	SH	sh
11	B	SH3	sh	44	23	SH12	sh	55	37	SH	sh
12	C	SH4	sh	45	24	SH13	sh	56	38	SH	sh
13	D	SH5	sh	46	25	SH14	sh	57	39	SH	sh
14	E	SH6	sh	47	26	SH15	sh	58	3A	SH	sh
15	F	SH7	sh	48	27	SH16	sh	59	3B	SH	sh
16	0	SH8	sh	49	28	SH17	sh	60	3C	SH	sh
17	1	SH9	sh	50	29	SH18	sh	61	3D	SH	sh
18	2	SH10	sh	51	2A	SH19	sh	62	3E	SH	sh
19	3	SH11	sh	52	2B	SH20	sh	63	3F	SH	sh
20	4	SH12	sh	53	2C	SH21	sh				
21	5	SH13	sh	54	2D	SH22	sh				
22	6	SH14	sh	55	2E	SH23	sh				
23	7	SH15	sh	56	2F	SH24	sh				
24	8	SH16	sh	57	30	SH25	sh				
25	9	SH17	sh	58	31	SH26	sh				
26	A	SH18	sh	59	32	SH27	sh				
27	B	SH19	sh	60	33	SH28	sh				
28	C	SH20	sh	61	34	SH29	sh				
29	D	SH21	sh	62	35	SH30	sh				
30	E	SH22	sh	63	36	SH31	sh				
31	F	SH23	sh	64	37	SH32	sh				
32	0	SH24	sh	65	38	SH33	sh				

SLURRED SPEECH

The speech speed is controlled by a 3.2MHz sine crystal (IC2). This is a readily available and cheap item which is intended for use in quartz clocks. The crystal frequency recommended by the speech chip manufacturer is actually 3.2MHz. The marginally higher than recommended crystal frequency results in a slightly higher audio pitch and very minor speeding up of the speech output. Further effect is great enough to be noticeable though.

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they are straightened out. Make sure all the integrated circuits are fitted the right way round, with the notches in the packages indicated in Fig. 2.

Orientation course

It doesn't matter which way round the electrolytic, resistor, and semiconductor capacitors are fitted, but the electrolytic capacitors and diode D1 must be fitted the right way round, in the case of the electrolytic capacitors '+' and '-' signs should be marked on the components to identify their lead-outs. The transistors have perforated leads, which should enable them to drop into place in the correct orientation easily.

Several link wires are needed, and trimmings from resistors/capacitors for leaded wires, may suffice for these. If not, some 22 g.s.w. tinned copper wire will be needed. Fit links single-sided printed circuit pins to the board at the places where connections to SW1, VR1 and the other off-board components will eventually be made.

Minimise loudspeakers, never meant to have any provision for silent listening, so just glue LS1 in place. Any good quality general purpose adhesive should do, but try to avoid smearing any onto the diaphragms. The printed circuit board is mounted on the base panel of the case using bolts and spacers, VR1 and S1 are connected in a standard volume control and on/off switch.

There is a small amount of point-to-point wiring to add in order to finish the unit. This is mostly straightforward, but Figs 2 and 3 show how to get the wiring to VR1/LS1 right. Fig. 4 shows pin numbering for the 35-way D1 socket which connects to the ST1's 'module' serial port. This shows the socket as viewed from the rear, i.e. the side on which you make the soldered connections.

A supply voltage of about 5 to 6 volts is required, and this is provided by four HP7 size cells in a plastic holder. These holders have standard HP7 style connectors incidentally—do not use a 9 volt battery as this may damage C2 and C4, neither of which are particularly robust.

The output signal is at 0 and +5 volts rather than the standard MICOM levels of -12 and +12 volts. However, the ST1's serial port (like most others) will operate perfectly well with these reduced voltage levels, provided a connecting cable of no more than a metre or less is used.

It is advisable to get the computer up and running before switching on the wire box, or there can be problems with spurious signals from the computer generating noises. Once the unit is switched on, with the unit pumped up it should be possible to hear a certain amount of background humming if you place an ear

close to the loudspeakers. If not, switch off-at once and give the wiring a thorough check.

Speak to me!

As you'll have gathered from the 'voice thinking' box, to produce a word you need to send the correct series of sounds, or allophones in the jargon, to the speech unit. A full list of allophones available is provided in the box, together with an example word which should help to clarify the exact sound of each. The key to getting realistic speech is understanding how a spoken word is composed of basic sounds.

It would be nice and easy if each letter of the alphabet had a corresponding allophone, but there is no easy match of this kind. Any software which tries to turn written English into the right allophones for a speech synthesiser certainly has a difficult task.

So what are the basic rules for selecting the best allophones? The most important one is to think as much as possible in terms of the way a word sounds, rather than how it looks in writing. This is how for instance selecting allophones for themselves, but is beyond the scope of most computer programs!

Looking down the list of allophones you will notice that there are often two or three allophones for what, on the face of it, is just one sound. There are, for instance, three 'C' sounds. The difference between similar allophones is, mainly one of duration. Allophones 'G02' and 'G03' are relatively short at 10ms and 15ms respectively. These are normally used at the beginning of a word. The longer 'G01' allophone at 150ms is mainly used at the end of words. The allophones for use at the end of words, or in the middle of them, also tend to be softer. Those for use at the beginning of words are generally much sharper, with a high initial rate that rapidly subsides.

With most of the sounds it is not possible to effectively stretch them out by using the same allophone two or three times in succession. This is due to most of the sounds changing in volume quite significantly from their beginning to their end. Using several of them in succession gives a sort of echo effect! There are some exceptions though, and these are marked with a '*' in the list. In order to get a good sound it is often essential to use two or three of these sounds in succession. Note that 'T', 'F', and 'S' allophones are normally only doubled-up when they are used at the beginning of a word.

Pause for thought!

The inclusion of short allophones makes it easy to insert the pauses that occur during speech. This is another aspect of the speech synthesis that needs to be given careful

thought if really good results are to be obtained.

When selecting the places for pauses it is only natural to assume that there should be short pauses between words, longer ones between sentences, and more at all during words. In reality, in normal speech you often run one word into the next, leaving a lot that are really phrases

PARTS LIST

RESISTORS		
R1	10k	brown, black, green, gold
R2, R3, R6	100k	green, blue, red, gold
R4, R8	10k	yellow, violet, red, gold
R5, R7	2k2	red, red, red, gold
R9, R14	10k	brown, black, orange, gold
R10	100k	brown, black, black, gold
R11, R12	22k	red, red, orange, gold
R13	100k	brown, black, yellow, gold

POTENTIOMETERS	
VR1, VR2	4k7 log with switch

CAPACITORS	
C1	100n ceramic
C2, C3	10µ polypropylene
C4	47µ 16V radial electrolytic
C5	22n polyester
C6	220µ 16V radial electrolytic
C7	100µ 16V radial electrolytic
C8	100n polyester
C9, C10	47µ 16V radial electrolytic
C11	2k2 16V radial electrolytic
C12, C13	22n polyester
C14	100n polyester
C15, C16	22n ceramic plate
C17	1n polyester

SEMICONDUCTORS	
IC1	4000000
IC2	8000
IC3	149555N Amplifier for speaker
IC4	970504 The speech chip itself
IC5	401100
IC6	1560018
D1	305405

MISCELLANEOUS	
SW1	25-way D-sub connector and cover
B1	4007P batteries in plastic holder
LS1	8Ω impedance 160mm diameter speaker
S1	1.5A/160Vrms silicon wire-wound crystal
D2	2.4V/160Vrms wire-wound crystal
	Formed circuit board
	Case alarm 100V 115V/50mm
	Control knob
	1 metre of 3 way cable
	2.1.1. Integrated circuit holders: 1 each of 8 pin, 14 pin, 18 pin, 28 pin, 40 pin
	80Ω resist, 100Ω and spacers for PCB mounting
	1mm diameter printed circuit pins
	Solder

GET KITTED OUT!

Ordering parts from electronics catalogues is a hassle, and if you haven't done it before you'll get really fed up. But don't worry, 68 design format in conjunction with Magenta Electronics is offering a complete kit of parts for sale.

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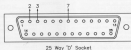


OPERATING SPEEDS

If you use the unit with a programming language that gives handshaking options, choose the no handshaking mode. This will allow for the default mode. If handshaking has to be used, select hardware handshaking and connect the CTS and RTS terminals of the modem port (i.e., *pin 1*) to *pin 1* of the unit. It should ensure that the hardware does not interrupt the flow of data from the computer.



■ Figure 3: Where the leads from the board (Fig. 2) connect to the Cts/Rts—Volume select.



■ Figure 4: Wiring the plug to go in the ST's serial port, as seen from the side you solder.

rather than individual words. Perhaps more importantly, multi-syllable words often have short gaps between one syllable and the next. Some words have a natural flow and are pause-free while others do not trip off the tongue so easily. Think about how sentences are spoken, and not how they are written down.

As a general rule, pause 3 is used between words, and pause 4 or pause 5 are used between sentences. The two shortest pauses are occasionally used within words, and are primarily added before 'th', 'ed', 'ing', and 'er' sounds. Pause 3 can be used in a similar manner before 'tt', 'ee', and 'ee' sounds.

'tt', 'ee', and 'ee' sounds.

Writing a speech program

This particular speech synthesizer uses a simple form of 'software handshaking' to communicate with the computer. Each time the speech box has processed one piece of data and is ready for the next byte it sends a 'dummy' byte of data to the ST. Looking at things from the computer end of the system, after each byte is sent to the speech box a software loop has to provide a delay until it detects the 'dummy' byte.

Set your ST's serial interface to

9600 baud, with eight data bits, no parity, and one stop bit. You may be able to set all this from the programming language, or from the standard ST Control Panel desk accessory. These settings are the default on the ST array.

No particularly complex software is needed in order to drive the unit. The accompanying ST BASIC listing gets the unit to say '1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19'.

The first alphanumeric value is read from the DATA statements, and then the program goes into a loop. This reads an alphanumeric value from the data statements, waits for a value of 255 to be received from the speech synthesizer to indicate it is ready to receive data, and then outputs the alphanumeric value to the serial port. Note that the first alphanumeric is sent to the speech synthesizer before entering the loop - failing to do this will result in the system hanging up while it waits for a 255-code from the synthesizer that will never be sent. The loop continues until a value of 64 is encountered in the DATA statements - an impossible alphanumeric value. This final value is sent to the speech synthesizer, but with only the bottom six bits being read by the speech chip it is effectively an alphanumeric number of 0 rather than 64. This is a 'trick', which ensures that the output from the unit is properly terminated. Many of the alphanumeric continue to be spoken until a new instruction is received, and without a final pause alphanumeric the output from the unit may not end properly.

After the final loop the last transmitted byte from the speech synthesizer read into memory so that it is not left in the buffer. Leaving this byte unread would cause a malfunction at the beginning of any subsequent speech output routine. This really ought to ensure that the serial input buffer is cleared before attempting to communicate with the unit, but ST BASIC has no simple way of doing this. Other languages often do.

When selecting the alphabets for your own sentences, remember the basic rules detailed previously. Look at the alphabets used in the examples, and try improving on them. Note the use of double-*ee* sounds in places, the short pause added ahead of the 'tt' sound in 'th', and the lack of any pause between 'th' and 'ff' which tend to be spoken as if they were a single word. The obvious alphabets do not always give the best results, and it is often the short words that give the greatest difficulty. The word 'one' proved difficult, and the obvious alphabets (46, 15, and 11) 'W', 'U', 'M' don't sound at all right. An 'WJ' sound added after the 'W' alphabet seems to improve matters, but perhaps you can do better?

GET YOU GOING

If you find your speech synthesizer is being uncooperatively shy - in other words it doesn't work - you'll be relieved to know that the ST supports Magnetics International's offering a get-you-going service.

Send your completed unit back to them with a £45 cheque to cover costs. Make sure it is properly packed, and address it to: Speech Synthesizer Repair, Magnetics International, 125 Clumber Street, Burton-on-Trent, Staffs NG14 2ST. Allow a couple of weeks for return.

THE SAMPLE

Type the listing into ST BASIC and run it to hear a growing message. If it doesn't work, check your serial interface is set to 9600 baud, 8 bits, 1 stop bit and no parity before suspecting a hardware fault.

```
10 read al1:alphone
20 read al2:alphone
30 read al3:alphone
40 read al4:alphone
50 read al5:alphone
60 read al6:alphone
70 read al7:alphone
80 read al8:alphone
90 read al9:alphone
100 read al10:alphone
110 read al11:alphone
120 read al12:alphone
130 read al13:alphone
140 read al14:alphone
150 read al15:alphone
160 read al16:alphone
170 read al17:alphone
180 read al18:alphone
190 read al19:alphone
200 read al20:alphone
210 read al21:alphone
220 read al22:alphone
230 read al23:alphone
240 read al24:alphone
250 read al25:alphone
260 read al26:alphone
270 read al27:alphone
280 read al28:alphone
290 read al29:alphone
300 read al30:alphone
310 read al31:alphone
320 read al32:alphone
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460 read al46:alphone
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1000 read al100:alphone
1010 read al101:alphone
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1070 read al107:alphone
1080 read al108:alphone
1090 read al109:alphone
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1110 read al111:alphone
1120 read al112:alphone
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1180 read al118:alphone
1190 read al119:alphone
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2990 read al299:alphone
3000 read al300:alphone
3010 read al301:alphone
3020 read al302:alphone
3030 read al303:alphone
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NEWS

SCREEN PLAY

With the remains of the Christmas cake festering in a tin at home and all the best of Santa's games now beginning to look boring, what better than a glance at all the new releases? **MARK HIGHAM**, games reviewer extraordinaire and resident Chuckie Egg addict, spent Christmas locked up in the Format offices to provide you with a list of the up and coming games.

PREVIEWS

DRAGON'S LAIR

READYSOFT/ENTERTAINMENT INTERNATIONAL ■ Amiga
£44.95 ■ End of January

This maze labyrinth game which introduced arcade games new gamers onto the Amiga. Dragon's Lair will come on its disk (happily justifying

SILKWOORM

RANDOM ACCESS/SALES CURVE ■ ST & Amiga
£15.95 ■ End of March

Leads and leads of events in this theme comic conversion. Silkwoorm is a horizontally scrolling game in which you have the choice of playing from either a chopper or a land-based jeep. Both of these have equal firepower, but with a two player option you can make use of the different features of both. The objective is to gunnery to blast away the fleets of missile launchers, tanks and perched against an impenetrable backdrop of smoothly-scripted desert landscapes. Great fun for the shoot-erup addict.

INTERPHASE

IMAGEWORKS/MICROSOFT ■ ST & Amiga

Price TBA ■ One February
Interphase is definitely not your average game. It's set in an underplayed future where people spend their

leisure time playing "Deathbricks", a recording of battles and phrases, you play only for a limited time. A bit like ST's Quake really.

Unfortunately, the Deathbricks Corporation are putting substantial messages in their battles to control people. It's your job to locate the security circuits of the mainframe and find and retrieve the lost Deathbricks.

Interphase promised the fastest and smoothest 3D tiled video graphics yet seen, featuring intriguing light patterns and the most dazzling fight and light sequences ever. That's a lot to live up to.

GEMINI WING IMAGES/SALES CURVE ■ ST & Amiga

Price TBA ■ End of March
This vertical-scrolling shoot-'em-up is described as "organic" game. Gemini Wing leads you through seven different levels of organic backgrounds filled with lots of weird alien, such as mutating butterflies, flying beetles and giant tadpoles.

With weapons, continuously named the Windowsen "Wise of Death", boring missiles and a frontal attack

GAMES INDEX

FORMAT GOLD

Purple Saturn Day	Informant	57
Real	Popcorn	54

REVIEWED

Catapult's Domain	Panther	59
Night Hunter	GGI Soft/Electronic Arts	67
LSD Storm	Mandarin	67
Invincible Striking Sphere	Activision	68
Who Framed Roger Rabbit?	Comix/Readysoft	64
Cosmic Pinat	Palace	65

CHEAT ZONE

Gamebusters	54
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ing the enormous plot and other 1200k of graphics and sound, the control Disk (the thing as he wanders through the reader's maze) contains in search of the last Princess. Salvage into relation to a recently deceased member of the "nighttown" cast. She is being held in the evil clutches of Sirge the Dragon and you have to rescue her from a bag of bones.

ST gamers may remember the rather gimmicky version for their machines which needed a keyboard player to operate, but the Amiga version looks set to be very much better. The game can only be run on a 1Mhz Amiga but its release is likely to prompt many people to upgrade.

SHOCK BOX

When the door of that room with a party of ugly gorgon-like strange to breathe their foul smelling breath over the world you just know that they've arrived with another release. Mark Whitham returned to the ship where some in their latest game, but also was nothing compared to the majority of the games arriving behind the doors in the Format office this month.

Among the 30 ST releases and 30 Amiga games was *Arx Fatalis* - a version of the game has finally appeared on the Amiga. Double Dragon from Image offered the reasonable opportunity to match the classic arcade shoot-'em-up and *Double Dragon* was another shoot-'em-up game from Image but instead of two-button arcade fighting, each other you could play in winning Mrs. Thatcher from the 1990s in the most holy game - great fun for all of the women. *Arx Fatalis* marked Operation Wolf was not only one but being, it arrived on the ST for about a quarter of an hour before it was cancelled off in favour of more for with a database. *Arx Fatalis*, also from Image didn't even last that long, poor graphics and a worse plot than our endurance to the limit.

On the better side there was the brilliant *Super Hang On* for the Amiga - one of the ST version in issue 1. *Microprose's* The President is Missing was another good release but didn't make the grade in the end. On the other hand, the *Telepath* version on ST? If you want to feel out more about this one, the next-generation *Ultima 5* still hasn't appeared but we're trying - honest!

Finally, Lords of the Flying Ship is getting closer - we received a demo which looks as if it promises a really great game. Watch this space.

spread out to the sides of the screen then rolls up and launches everything it's going to be heroic.



▲ *Archer - VERMINATOR* isn't too

VERMINATOR

RAMBER/TELECOMSOFT ■ ST & Amiga

£19.95 ■ Early February

When did you first see an ad for 'Verminator'? Six months or more it may have been, but the game looks like it was worth the wait. Set inside the trunk of an ancient oak tree, now containing over 250 colourful locations from top to bottom, you have been employed by the Tree Council to rid the oak of spurious vermin. This is your chance to make some decent dough - taking what you might not



▲ *Free Command*

Scoring from the Mob.

FINAL COMMAND

BMG SOFTWARE ■ ST & Amiga

£19.95 ■ End of February

The last words uttered by Hyperstation Alpha were: 'We are under attack.' Being a pretty cool guy and a space adventurer as well you've been selected to go for mission impossible. This action-packed adventure will lead you to the limits of

space as you communicate with friends and foes in your quest for information. With interplanetary spies, deadly fighters and enemies of your kind, you'll need lots of skill and great ingenuity to discover what happened to Hyperstation Alpha.

DANDY

GRANDSLAM ■ ST & Amiga

£19.95 ■ End of Feb./Early March

Grandslam have strapped up the rights to the Dandy comic adventures - episodes with Bessie Heck, Desperate Dan and his cow pals, and Korky the Cat. Bruce Rayle is employed in a strange cake factory loaded with the objective to take as many cakes as possible. But with overflowing dough and conveyor belts that break down every time Bessie Heck tries to put a cherry on the cake, the task is hard



▲ *Can you bear the challenge of*

small becomes very tricky.

TRAINED ASSASSIN

BMG SOFTWARE ■ ST & Amiga

£24.95 ■ Beginning of February

The promise of super-smooth movement and animation should combine to turn this shoot-'em-up into a game of true arcade quality. With five levels of action featuring brutally animated monsters and pick-up enhancements for your ship, you'll need to defeat wave upon wave of ugly aliens as you take a trip through twisting tunnels. At the end of each level you'll need to blast away the largest monster you ever did see.

SWORD OF SODAN

DISCOVERY/GAMSTAR ■ Amiga

£14.95 ■ February

Massive sprites are moved around the



▲ *Find DRAGON'S LAIR* in the Amiga

screen of SuperFast Sodan is the game already seen in the 1UP. You move through different levels incorporating various scoring and a range of enemies which can only be defeated by wielding your sword and making sure they get to know who's in charge. Sampled sound effects and great graphics make it a game you'll want to add to your collection.



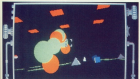
▲ The sophisticated scenes of *SWORD OF SODAN*.

TINTIN ON THE MOON

INFOGAMES ■ ST & Amiga

£19.95 ■ Early February

Tintin and his fluffy white buddy, Snowy, climb into their red and white space-ship and set off to the moon. Being in control of their destiny, you have to pilot the ship through meteor storms, various attacks by outer-space aliens and land the ship somewhere in the deep craters of the moon. But you're problems don't end there. You'll need to overcome weightlessness and deal with Captain Haddock, Professor Calculus and the bumbling



▲ *Can you stay awake for INFOGAMES*



▲ *Tintin* on the Moon



PURPLE SATURN DAY



EPIC/INFORMAMES

ST - Reviewed. Mouse, Joystick, £24.95

Amiga - Out by the time you read this, £24.95

When it comes down to it, the turn-of-the-century is a pretty pathetic bunch of years. But it's only when the odd superhero wanders into the Universe that we really start feeling incompetent. Purple Saturn Day is Infogrames' follow-up to the mind-blowing Captain Blood, and offers mere mortals the chance to put aside inferiority complexes and give a thorough drubbing to all our ugly alien neighbours. They might all have faces strongly resembling a two-day old trifle, but they're skilful enough to make daunting opponents.

AIM

One day a year the stars of Saturn turn purple and the inhabitants of the neighbouring planets come together for the planet's Olympic And believe me, they're almost as ugly as the Olympic committee - and that's ugly (what do you know - Ed). With four challenges designed to test your skills of speed, strategy and endurance you're going to be faced to your limit.

You have the option of timing or going for the full challenge of the competition. Timing allows you to play the four games in any order and as often as you like. The competition offers 24 opponents and four games to complete. It's pretty clear you'll never see the three races of each event - options may, therefore, be a bit - but if you do then the winner is treated to a kiss from a Saturnian beauty. (Sadly, this kiss is a little less than a French kiss.) This may be a good one more powerful than a credit card gift card (and since things offered are the result).



3. Flying right of the red markers and left of the yellow ones soon lets up the old score.

THE CHALLENGES

RING-PURSUIT

Don't get caught with search marks on the chosen man if you're going to finish this challenge. The objective is to fly a Saturnian course around Saturn's external rings avoiding collision with a set of markers. As long as you're ahead of your opponent you can build up the old score by timing right of the red markers and left of the yellow ones. This gets pretty tricky and they challenge you, but a flag at the corner of the screen gives you some idea of what's on its way. Stop the wrong side of the markers and bonus points are awarded to your opponent.

TRONIC SLIDER

Gathering eggs was a sideline in Double Egg, but Purple Saturn Day takes it into the future - minus the Saturnalia. You're in a race against the Clock to take around the four jacking up energy globules. A super-fast energy ball races around the screen, and by firing at it you can increase the power that it holds. The ball will then rotate and react off somewhere else while you have to go back and pick up the glowing orange balls left behind. If you don't get back in time your opponent claims a reward.

BRAIN BOWLER

Fancy a bit of brain surgery to lighten the long winter evenings? With two piles of a brain carefully not functioning towards the the Atlantic ocean, doesn't it? Your task is to get your ball working again by connecting all the chips together and ensuring that the moving path has a free path to the centre of the brain. You need to collect balls of energy and fire them at the chips in order to join

them up. Your opponent's opponent makes this no easy task when he wanders across to your playing area and ends out all your hard work.

TIME JUMP

Jumping into the future is the idea behind this game - don't expect to meet your sister on the way but 5000 centuries though. Hook down the destination to gather energy and then release it to jump forward in time. This produces a cluster of squares which you have to shoot. You go through this process three times as you wind up the temporal spring, after which you shoot through the wires start at the end of the galaxy. Hold on to your position or the resulting looping speed will send you straight into a cosmic jelly.



2. Select the different games - the ugly bunch are your opponents.





▲ A red chip can be taken out of your opponent's head but once the pulse has changed it to green then you can't take it.



▲ Collecting energy is the sticking your finger in the line and a computer head - you glow blue until you fire the pulse.



GRAPHICS AND SOUND

All the games except the Brain Buster provide a view out of the front window of your vehicle. This has the effect of really making you in the gameplay even though it often makes manoeuvring considerably more difficult.

However Captain Blood had its entire graphics sequence buffed in a later release, so it's a bit of a pity that the graphics efforts in Purple Saturn Day are strong enough to keep you playing for hours. The animation in the basic 'loser' game is kept impressively smooth, which is no mean feat considering the size of the giant purple monster being moved around. Keeping the darting blue lights in the Time Jump game could have been improved by a faster response to the fire button, or even an auto-repeat on the joystick.



▲ As this is the winner's prize, it is 100% good to me.

Colourful impressions are great, as well as effective screen colours and sound effects help to leave you wondering if somebody has just pulled the plug out from under your monitor. Other sound impressions have been as well as added as these in the new signature Captain Blood.

▲ It's up to you to reactivate the brain-dial's controls. Make use of your grey matter to re-align all the controls to the centre of the brain and win. Don't expect your opponent to stick to his side - when the chips are down he'll come along and undo all your hard work. Alone - pair!

CONCLUSION

Purple Saturn Day is a brilliant game with something for every body. The four challenges are designed to appeal to the widest possible audience, so you're sure to find something worth playing - unless your idea of a good time is transporting on transport station from the strategies of Brainbuster to the traditional shoot-'em-up of the Time Jump. You'll be fairly convinced to your taste.

Purple Saturn Day is arguably the best release of 199 for the 16-bit scene, and is certainly a formidable challenge to the games of '90.

still graphics



moving graphics



overall look



testing interest



overall 98%

▲ After a couple of weeks on a small game area counts like a great idea for you. You have to run around and looking for things of your energy which can be an exhausting.



▲ The player doesn't lose any energy, but on the wrong side of the line and he'll lose his energy. When he's back up to his energy level, you can go back and collect.



▲ After the player doesn't lose any energy, but on the wrong side of the line and he'll lose his energy. When he's back up to his energy level, you can go back and collect.



▲ The Time Jump. The player doesn't lose any energy, but on the wrong side of the line and he'll lose his energy. When he's back up to his energy level, you can go back and collect.



▲ The Time Jump. The player doesn't lose any energy, but on the wrong side of the line and he'll lose his energy. When he's back up to his energy level, you can go back and collect.



BAAL

PSYCLAPSE/PSYGNOSIS



ST - Jaystock. Reviewed: £19.95

Amiga - Out by the time you read this. £29.99

A rebreathing is a pretty weird way of earning a living at the very best of times but when you're dealing with a strange character rejoicing in the name of Baal you know things are going to get creepier and creepier. Baal

is the follow-up to the hugely popular *Beneath* but is it any good? Exploring the underground lair of some guy with serious body-colour and a fetish for walking off with your four limbs is the order of the day.



■ This weird-looking platform game you access via the rocket pack and provides a painless way to do a tour of the lair.

■ The rocket pack might do a great job of moving you around the cavern but you need to find another telephone box for landing, so it's *Home James*.



■ Landing on one of these platforms is the only way to lose the rocket, short of exploding, a painless way to do a tour of the lair.



■ This ugly chap is one of your enemies. Thankfully you're armed with the might of laser-power.

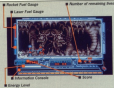


AIM

The evil Baal has threatened to take over the world with his army of the undead. Now he's got a lot of hordes trying to deliver his task because he needs to get hold of a top secret war machine if he's going to get *Jaystock*. This is where you come into the story, the only way to put an end to Baal's burling and guffing, is to beat the thing before he gets his gobby hands on it. Easy you say? You ain't been totter yet.

Some seriously cheap guns and bits the war machine into two different parts which have been scattered across Baal's death-trap for 'course you get to get hold of these separate pieces to use the guns.

As you're probably pleased by this point, the task at hand is not really as easy as it seems. Baal's mission for (supposed) success, has been made of different creatures looking the same, each armed with some sort of weapon ability to do less much for your state of health, the reason for this one. You're going to have to survive all kinds of ugly creatures to collect the yellow flashing war machine pieces scattered across Baal's lair. With these separate elements, two of which are hovering on the rise of our nation, you know you're certainly got your work cut out for you.



■ The laser-reloading point.

STRATEGY

Locating different parts of the war-machine is a tricky task. The Baal domain is arranged in the form of a complicated maze like the early set of *Operation*, with one level after another of weird monsters and disturbing face-hats. Unfortunately the members are pretty resistant and took a lot of firepower before dropping - very much like *Samurai Gears*. Since they have this resistance to get rid of it's also important to use them out quickly.

The first levels are less tricky than the rest. You need to locate the generator, scattered around the maze of floors and ladders and fire at them until they eventually explode into flames. Each level has a corresponding generator at some other point in the maze and by destroying this generator you can switch off the level. At certain points in the game these knowledge take up the entire length of the maze making it impossible to pass until you have destroyed the generator. Weapon cartridges are scattered around the maze, and by collecting them as you go you can increase your firepower. *Rockit* including pots, usually found on the opposite side of an active level, and they eventually explode into flames. A few labeled 'Invisible' and 'Invisible' are also scattered around the maze.

As the war machine is not a real machine and when it's all over you feel that you've been successfully equipped with a weapon. You can't fly off over the horizon but there are only two types of landing again. The first is to cut down your force on another level and go on, not quite so quickly, you can see for your feet to hit out and die. Fuel reserves extremely quickly when you're flying around so you're actually to get away if you don't have a full tank-pot.



4. No, this isn't a scene from *Tarzan*. This little Mawo fellow is about as friendly as the rest of the gnomes down here.



4. This beast has the manners of your furry friend and is probably about as friendly.



4. This ominous strip of blue light is the force field. Beware - it can't be switched off just by waving your hands at it.

CONCLUSION

If you liked *Mawo* then you're sure to love *Boo*. Its multitude of levels create a maze of problems. Mawos, forcefields and our mousey party ally in the same place with each game so coming back again and again finding ways to tackle each obstacle is what keeps it addictive. And in the end of game life is how you coming back for more... and more. Each time you turn off the machine you know that there's something you still haven't managed to complete. The different levels offer cool things which will keep you hooked for months.

still graphics

0 1 2 3 4 5

moving graphics

0 1 2 3 4 5

soundtrack

0 1 2 3 4 5

feeling interested

0 1 2 3 4 5

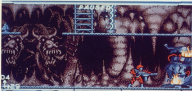
overall 91%



4. Peering into the huge cavern to confront Boo.



4. It takes a lot of firepower to stop this one, but it's got to be done if you're going to disable the force field. The generator disappears in clouds of fireballs and the field has been disabled.



4. Well that wasn't too hard. At least it isn't all that.

GRAPHICS AND SOUND

The graphics in this game are remarkably similar to its predecessor, *Mawo*. Definitely one of the major reasons of fail you. The resources are brilliantly associated with each item sounding mouthful of hungry moles which they aren't too efficient to get out. With lots of other interesting, unusual creatures struggling against you, everything quickly becomes pretty hectic.

On-screen objects are not as colorful as those which were used in *Mawo* but the design version looks certain to remedy this fault. The different levels, accessible via a walk-in transporter, offer gamblers against yellow or green background. These have been as well as the

first screen which is where you'll probably spend the majority of your time. Explosion effects might not look entirely realistic but they certainly convey the right idea. It's when you're knocked out the generators and come back to them late on to find that they're still something that you realise the whole game has been surprisingly designed.

Sound effects are not exactly mind-blowing, with simple explosion sounds and sparse effects scattered elsewhere. There's a really annoying crouch, similar to making an 'o' on top of a head of Convolutions, making with each flash of your character takes.

GALDREGON'S DOMAIN

PANDORA

Amiga - Meese. Reviewed. £19.99

ST - Out soon

Once upon a time - in the deepest, darkest depths of the Lands of Mazon - there was this

wizard guy wandering around with the weird name of Atazazel. Old Az belonged to an elite occult

movement and generally did evil things. His wrongdoings didn't make him a happy man though.

GAMEPLAY

As is wanting. Searching for the five special gems of Jalon. It's up to you to get hold of the gems before he's. These bits aren't like the old maze mazes. In your first level, they actually do things like giving you special powers.

This might seem like a fairly easy task - after all, it's only five spiky things. Unfortunately there's a twist to the tale: the gems are scattered across 2500 different locations. The problems don't stop there. You see, there are also a range of monstrous ugly beasts, who've taken it upon themselves to guard the gems. This would be fine if they made

some attempt at being friendly, but do they? Do they tell if you're going to get hold of the precious gems then you'll need to make lots of stealthy moves and do some quick thinking.

Help can be obtained by peeping down to the local towns where you can communicate with the natives. The friendly chaps will give you information on the best ways and clues as to where the gems are hidden. But beware: these guys have the mouth of a shark - and steel just as hard. If you're not careful they'll make moves to destroy you.

INTERACTION

Communication with this sort of game is always dubious. Ideally you could sit in front of your monitor and chat verbally to all the different characters. Galdregon's Domain doesn't offer this, but the range of options available are extensive.

Along the bottom of the screen is a box which gives you an extensive choice of options for each situation. By pointing the mouse onto one of these and clicking you can select the feature. To the side of these are icons used to provide access to all sorts of spells and lighting options.



A. Inside the domain. Select which spell you want to use and try and wipe out the ugly creatures.

GRAPHICS AND SOUND

The graphics set the game aside from its forerunners. Brilliant detail can be found in every background, and the characters look menacing enough to have you quivering in your boots. One of Domain's best features is that you'll never come up against a grey wall - every single screen employs a wide range of colours and detail.

The sound effects have not been forgotten either: digitised sound effects accompany each location and a range of grunts and groans fill the air during combat. You begin to feel involved in the action. Switch off the lights and turn up the volume; you'll soon forget that you have to be at work the next day.

CONCLUSION

Galdregon's Domain is similar to the now infamous Dungeon Master, but is set aside from the rest by its great graphics and atmospheric sound. You'll be wandering the territory for ages. And with a Galdregon I promise, you just know what you'll be doing every night for the next decade. It's a great game and well worth the challenge. You'll be hearing a lot more about Galdregon's Domain from now on.

still graphics	1 2 3 4
interaction	1 2 3 4
soundtrack	1 2 3 4
testing interest	1 2 3 4
overall 87%	



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GAME BUSTERS

ARKANOID II

BT

While Arkanoid is loading, press down the right-hand mouse button and keep tapping the left button. Stop tapping the left button when the program loads. You will see a picture advertising Nintendo.

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TEST DRIVE

BT

If you fancy a high score without actually having to play the game, simply carry out the following steps:

- Load Jet Wind or some other BP and insert game disk II
- Set the directory to + +
- Open the highscores file and edit
- Save the file once you've finished

Note that the high score shouldn't exceed 99,999 and the name must be 32 characters or less. If you want to change the car for a particular score, simply use any of these codes (must be in lower case): p[11] - Porsche 911, Turbo; w[10] - Corvair; k[09] - Lotus; f[08] - Ferrari; r[07] - Ferrari Testarossa; c[06] - Lamborghini Countach.

Steve Buchanan
Preston, Aberystwyth

INTERCEPTOR

Amiga

Following is a listing that, when run, lets you choose which mission to take part in. Load Amiga BASIC, type in the listing below, save the listing to a floppy disk, run the program and insert the big disk when requested. Run Interceptor and select option six

When the foot steps sound so very close to you; when you look around and they're all after you; where ya gonna go? Gamebusters! Ya don't get egg on your face here, matey.

on the menu for selection six.

```

10 PRINT "WELCOME TO INTER-
  CAPTION GAMES."
20 PRINT "PRESS "ENTER"
  FOR THE MAIN MENU."
30 PRINT "PRESS SPACE ANY
  TIME..."
40 WHILE NOT~
50 GOTO 10000
60 PRINT "PRESS "ENTER"
  AGAIN..."
70 GOTO 10
81 "END OF
  FILE"
90 PRINT $1, $2 AND $3
100 GOTO 1000000
110 PRINT $1, $2
120 PRINT $1, $2
130 PRINT $1, $2
140 CLOSE $1
150 PRINT "PRESS "ENTER"
  AGAIN"
  
```

Dave Foster
Woking

If you are getting bored flying around and shooting at things, you might be pleased to know that the flight simulator makes a very suitable ground car simulator. If you don't start off on the aircraft carrier, that is.

Just don't take off. Make sure you avoid the sea and the darker coloured grubby areas (so that it jumps land and you get stuck). When you go over the bridge you'll find out that it is best to fly.

Andrew Burns
Manchester

GAUNTLET II

BT

Providing you have the original Gauntlet, you can get up to some great fantasy. Load Gauntlet II as usual, choose player and start the game. Load all the players disc. Place the Gauntlet I disc disk in the drive and start a new game with the same characters. The

screen you start on will look a weird, but it will be full of magic potions.

There is one problem; you have to wait for the walls to turn into only (before you can leave the room. Remember to replace the Gauntlet I disk before exiting.

Carl Riggsall
Huntingdon



AAARGH

Amiga

In the start of each screen you'll find various different buildings.

Now fly over them and then hit them; this will make them burn down a lot faster. When you burn or knock down a house you get to light an egg at the beginning of the light meter. Save you just your finger on the fire button and put the joystick towards the appropriate.

Carl Paine
Bedlington

CARRIER COMMAND

Amiga

Start an action game and paste the game straight away. Type in THE BEST & HIT TO BE INCLUDING

spared. 'Great mode' will appear. Press + on the numeric keypad to protect manta and Ali's from enemy missiles.

To complete the game with the cheat mode, set your carrier straight to Storm (both end of Thermopylae). On the way aim at manta and get their individual courses so that you cover all sides of the island. To speed to Storm (both end of 7 on the numeric keypad). On arrival, just outside Storm, reverse your carrier so there is no island in range of manta. If you've been quick enough, you'll be in position before 'Island is now an enemy island' appears. Restart if it has already appeared. Press 7 until the message says up (you'll hear a ping). Select the message screen and hold down 7, after a minute you'll hear a second ping. Let go of the 7 key. The message 'Storm is being attacked' will appear. Launch all manta at full speed to their preset destinations where they occur. Take manual control of manta and circle the island. This should see the enemy carrier fly away and into the carrier file - key will protect you, but not into the sea.

This should destroy the carrier after two seconds contact. After five seconds you will be asked whether to continue or not. If you select no, you'll see the complete bonus screen.

Pressing + or - on the main menu cycles through all game objects.

Andrew Reader

Maidstone, Kent

Instead of reinforcing your supply lines go straight for the enemy's home island. However, as it houses the enemy supply line and destroys the enemy carrier.

Scott Hutchings
Shepperton, Bedford

ST DISK CHEAT BONANZA

Lots and lots of them this month:

ELITE 100 for, naturally enough, *Elite*. Lee Davidson's hack promises you with an indelible action trip. Simply use the program and enter the original file disk when requested.

HERAUS 100 - another of Lee's hacks. This one provides you with infinite Pages in the game *Heracles*. Simply insert the game disk when asked.

The next four cheats are provided by prolific publisher Chris Kingsley and only work with the games that form part of the Autumn 1990/1991 Super Pack:
WINDMILL 100 - for *Paladin*.
WARRIOR 100 - for *Warrior*.
TAURUS 100 - for *Taurians*.
ZYNGAR 100 - for *Zyngar*.

These games only work in the UK version. Make sure you insert the original, write-protected, game disk when requested.

GRAIL QUEST

BT

The complete solution to Microsoft's marvellous adventure.

On the first screen there is a bag of gold hidden in the bushes - don't pick this up yet. Use magic on the dragon on the next screen, but spare it's life. Go to the castle and kill the goblin at the entrance. When inside the castle, sleep on the stool for three nights. When the man awakes up to you, on the third night, give him some of the cure found in the basket in the window at the top left hand corner of the screen. Go back to the forest and give him the gold from the bush and return to the castle. Leave him at the inn while you sleep in the street. Return to the forest. When you meet a hooded man return to his house with him and cure his mother. Return to the castle and go to the upper level. Use magic on the tomb, but spare his life. You will then be transported to the world of dragons where you must find the Grail. In the forest there is a

man crouching on the ground, cower and then go west to a pit in the ground. Enter the pit and approach the light - you will complete the game.

Paul Spencerley
Crawley Down, Sussex

FAERY TALE

Amiga

One of the hardest things to overcome when first starting the game is how to avoid being thrown what to do.

Make the crystal palace on the Isle of Fantasy your prime target with the first character, John. When you confront the goblin witch, click on ask. She will give you a gold statue and a clue. Now keep clicking on ask your luck for level will rise from 20 up to 40. This makes you impossible to kill. You can always return to the same spot and do the same if your luck runs low.

Walter Laine
St Mirans, Stirling

ROCKET RANGER

Amiga

Don't bother wasting valuable game time trying to remove the professor, you will always be too late and it wastes valuable Lunatics. Instead use the agents to find rocket factories and wire up bombs.

Scott Hastings
Bishop's Cleeve, North

CHRONO QUEST

BT & Amiga

The solution to the first level...

You need to pick up punch cards to get to further levels. Go upstairs and examine the bottom of the statue - not the pillar. Examine the corner of the carpet. Open the chest of drawers and get any items. Drop the key that you used to do this. Go through the north east door. Examine the gap between the two cushions. Examine the gap under the bed. Examine the small cabinet nearest to the central panel and get the item in the drawer. Now go out and down the stairs. Go west and get the round item on the book shelf. Go east and get the object on top of the left pillar. Go east and then north west into the kitchen. Find the safe and use the piece of paper on it.

Get the lighter. Get the bottle and empty the wine from it. Go to the start position of the game and go through the door. Stop light the lighter and go up. Turn the lighter off. Go west. Examine the floor and the top of the cupboard and light the candle with the lighter. Now go east and down twice. Go east and down twice. Now go west.

Drop the first three cards that are nearest to the central panel. Examine the drawers above the chair. Examine the mirror on the top right until a switch appears. Push the switch. Stop. Go east

and up. Now go South West and get the ball from the pillar on the left of the stairs, drop it. Go through the door, down and west. Go through the door... ah ha. The time machine.

Push the lever - that is, in the wall next to the four tea spoons. Put the bowl in the four tea. Now get the switch. Now go up and you're in the machine. Put the card that you are taking into the card slot and flick the switch... The next level.

Andrew Jackson and Carl Evans
Huyton, Liverpool



BAAL

BT

As warriors are not enough to defeat the hordes, it's to do any serious exploring in the game. You are awarded an extra warrior every 1000 points. To gain points you must destroy monsters. It is possible to find a convenient refuelling location that's got monsters nearby.

Simply by moving between the hunting depot and the monsters (making sure you shoot the monsters), you can build up points and warriors quickly. The process is tedious, but having scores of warriors makes the game less threatening. Such a place exists at coordinates 08-40 on the first level.

Alan Hayford
Millom, Cumbria

GAMES UP FOR GRABS

Game Masters needs your tips, tricks and magic for any BT or Amiga game. Don't keep them to yourself. Send them now and you might find yourself several major games free. If you send in hints on disk you could win yourself a special prize. It makes sense, so do it. Send your magazines to Game Masters, BT/Amiga Forum, 4 Queen Street, Bath, BA1 1JA.

Once this month we: awarded **MAJOR** for giving the game away in *Comix Command*. Amiga positive on the way to his computer, **Amiga** and **Amiga**. Thank for their combined efforts in *Comix Quest*. BT software on the way to them. Yes, both, we would like the rest of the solution.

LEE (SPENCER) who gets a special prize for his expert *Elite* and *Heracles* disk hints.

JOHN KINGLEY who also gets a special prize for his *Paladin*, *Warrior*, *Taurians* and *Zyngar* disk hints.

OPEN 7 DAYS Mon - Sun

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LED STORM

US GOLD

ST - Joytech. Reviewed. \$19.95

Assigns - Under development

These futuristic, high-power steel cars are all very well, but they're not particularly well supported. Underpowered turbo-vehicles give you incredible acceleration, and the ability to fly may well come in handy but what do you do when all you want is to speed a car of beams and can't find a teenager?

US Gold have hardly required this fundamental question, but if you can do without your precious car of Hertz beams then there's nothing stopping you from venturing onto the city plains on an empty stomach. Your mission is to reach checkpoint Arthur of the City before your energy level runs out and you're turned into a scrambled egg. With nine levels, taking you from Capital City across towns, tunnels, desert and valleys before you finally get to the

as your destination, make sure you pack your thermal underwear and Bermuda shorts.

The game is very much like an enhanced version of Major Motion. You need to drive your vehicle along narrow roads, through tight spaces and avoiding gaps in the road. Clicking on the fire button allows you to leap into the sky - a necessary skill when the road ahead has been completely obliterated. It should be that handy as you navigate the roadways on the M25!

Energy difference

You need to avoid enemies ranging from juggernauts to unfriendly things who can't be turned into a porcupine quite as easily as their real-life counterparts. They affectionately cling on to you and prevent you from jumping into the air.



Additional powers can be picked up by collecting the different energy tokens. Flying talents can only be retrieved by jumping, which is in the road.

LED Storm is a vertically scrolling game with super-fast action. The graphics are not exactly mind-boggling, and the sound effects will temporarily ensure you keep your fingers in your ears, but the action is great. Leaping through a multitude of different levels gets extremely addictive.

a Okay, where are the frogs?
When the action gets tough the frogs make it tougher.

still graphics 3.0
moving graphics 4.0
soundtrack 3.0
testing interest 4.0
overall 71%

NIGHT HUNTER

ELECTRONIC ARTS/AUBI SOFT

ST - Reviewed. Joytech. \$19.95

Assigns - Out in March

Pick up your axe/bill before you take hold of the joystick and get bugging it out for domination of the Vietnamese underworld. This game from UBI Soft requires you to run around the different rooms of a house retrieving parchments and keys to get through the 30 different levels of 20 screens. You assume the role of a Vampire who must tackle all kinds of weird creatures which range from a lycanoid spider (aka Spider) to Norman (based on the unlikely character of a Robin Hood character who appears on the screen a little too often - which wouldn't matter if he didn't keep firing arrows at you).

Spook blood

You can look at life in two ways:

either you're a really pleasant guy conquering your enemies by approaching them and sucking their blood or, alternatively, you can transform into a bat or a werewolf by making use of an old joystick concection. The werewolf

has extraordinary strength which is activated by pressing the fire button - one punch and you'll destroy dead dead quicker a battery chicken.

Becoming a bat doesn't give you any special features but it does allow you to zip through each screen.

Smooth mover

Occasionally you can come across a magical door which glows blue and red, rather like an

Soldfield Bay machine. This is the door through to the next level, but unless you've accumulated three parchments and five keys then you're stuck.

The game's animation is colourful and fairly smooth. A slight hangup as you move from one level to another becomes frustrating at times but you soon learn to get on with it.

Sound is limited to blood sucking noises and lots of rapid effects which quickly become monotonous, but when Dracula enters his arm and goes for a bit of blood-sucking he actually looks as if he's enjoying what he's doing.

still graphics 3.5
moving graphics 3.5
soundtrack 2.5
testing interest 3.5
overall 69%



a. Go for a bit of blood-sucking in your spare time.

INCREDIBLE SHRINKING SPHERE

ACTIMSION

ST - Reviewed, Joystick, £119.95.

Amiga - Out February, £24.95

What gets bigger when excited and gets when it's on a mission? Me, silly - it's the

incredible Shrinking Sphere. With sponges, icons and a range of beasts you'll need at least

six eyeballs and a multi-tasking brain to keep track of all the action. Considering the quality of Actimision's recent major releases - *Afterburner*, *W-type* and *ES* - you know you're in for a treat.



■ With three different sizes of sphere you'll soon be begging for a magnifying glass.

GAMEPLAY

Supermadness might sound like an Italian recipe for boiled pasta with added weed but it is actually the Sphere Cloner training arena, affectionately known as the Death-Run. Matt Ridley, a frustrated desk-bound officer has lost his marbles and gone in, but he couldn't handle it and is marooned somewhere in the middle. The only way he's going to survive is if you get to him in time. Unlabeled, you climb into your fighter sphere and follow.

The spheres within the training arena are arranged in tiers, four deep. Tactonic tiles lie within each tier and these affect control of your fighter sphere. Passing over a tile activates a timer which counts it to zero later - if you pass over a hole you fall through and die.

The real problem with manipulating your sphere is changes of size and mass. Passing over certain tiles causes your molecular structure to alter, so your weight changes. Some tiles are fragile, so passing over them when you are heavy causes them to collapse and you're plummet to destruction. Wandering around the maze when you're large is like wheeling a skip through Cernobyl's - certain walls come so close together that it's impossible to pass through.

Shield icons and firepower are available which are pretty essential when the screen begins to fill with aliens and the dark-looking hoodlums. White holes and black holes provide access to other tiers, and should you love a tile then you begin again on the same level with the ammunition and shields which you'd had at the start of the level.



■ You can position armor dumps at the start of the game, allowing you to get your hands on a range of firepower.

CONCLUSION

This is the last game which'll leave you more hooked than an acid house party, so betting through to a pinhead of neurons only to find that you can't score the high scores is a bit of a major blow.

Controlling the sphere takes a lot of practice because this isn't just another Pacman. With an ever-changing maze, firepower and mass that turn to different bits, you know you're in for some real excitement.

ST VS AMIGA

Graphics in the two versions are virtually identical but it's in the sound department where the changes really show up. The Amiga has far better sound effects, from the simple bouncing of your sphere through to an impressive loading music. The Amiga version is also very much faster although it's disputable that this is an advantage. Certainly the ST game is far easier to play and is an already difficult game that's got to be a bonus.

GRAPHICS AND SOUND

The action takes place in a window surrounded by information about your speed, lives and state of your shields. Progress through the levels is met with different styles of music and increasingly impressive tiles. Your wanderings are often tempered by collisions with the binary boundaries, which has the effect of bouncing you between two points fast enough to have you thinking you're on an interCity speed - probably the 7.18 to Clapham Junction.



■ The range of firepower.

Sound effects are fairly basic on the ST version. Limited beeping and bopping spot effects accompany your progress round the maze and emerge as you move between levels or encounter aliens.

with graphics

1 2 3 4 5

moving graphics

1 2 3 4 5

soundtrack

1 2 3 4 5

testing interest

1 2 3 4 5

overall 90%



WHO FRAMED ROGER RABBIT

BUENA VISTA SOFTWARE/GAINSTAR (TEL: 0252 877431)

Amiga - Reviewed. Joystick. £29.99

ST - no version planned as yet

Hollywood, 1947. You're walking down the main-road of Tootsboro when some smart rabbit in a polka-dot tuxedo dashes up and gives you a big kiss. Yup, you guessed it, Roger Rabbit has been a path onto the 16-bit scene.

GRAPHICS AND SOUND

Instant graphics ensure that the characters actually look and act like cartoons. When Roger gets drunk he starts reeling, spins round eventually collapsing on the floor. Realistic, or what? Even the cars look exactly like the Disney vehicles.

Even though huge graphics hurtle round the screen, the game is remarkably snappy. Action is fast with Roger taking round tables, so quickly you'll think you've just come back from a night on the town. Sound effects haven't been forgotten either: a terrific stereo soundtrack gets your feet tapping.



■ Just tell me Walt sent you. The Ink and Paint Club - the only place where toons and humans can hang out together!

Toontown is a unique area of 1947 Hollywood where cartoons and humans share the same sidewalk. The star of the show is Roger Rabbit who's just an ordinary guy (don't you mean rabbit? - Cal who's been framed for killing Marvin the Gag King. Marvin's will mysteriously goes missing at the same time. Consequently the head's on Roger. The head in this game is 'toon hunter' Judge Doom. Doom's not to be mixed with the earlier Clip which creates cartoons. Roger's got to be quick if he's going to keep out of Doom's grasp and find Marvin's will.

The game is split into three parts - Benny the Cab, Ink and Paint Club, and the Gag Factory. Benny the Cab is more than just a racing game. 1940-style cars head towards you in both lanes; you must jump over the cars, avoid green Clip and cope with the strange joystick control. No easy

task for a rabbit.

The Ink and Paint Club is the only place humans can go to enjoy live performances by toon stars - but you're not interested in any of that. Marvin's will has been written on a record in disappearing ink, so you have to dash round all the tables picking up records and avoiding glances of suspicion. Whatever you do, don't let Roger touch a drink 'cos once he gets drunk he's doomed in the dreaded Dip.

The Gag Factory is where the toons are made. Luckily the wags are waiting for you and you'll need to make them laugh themselves to death. This tricky feat is achieved by picking up as many gags as possible. Once again you'll need to master odd joystick combinations to pick up and use the gags - get it wrong, and a gag could backfire.



■ Steinhilf! the wavy, wavy quiet. I'm hunting rabbits. Benny might not talk like a saint and his driving often has you wheeling around on the top of buildings avoiding clips but he does his job (heard Holy Mother Mother! Who if you think I am, Disney Temple! Finding the Ink and Paint Club ain't easy ya know.

CONCLUSION

For all its brilliant graphics, sound and speed, Roger Rabbit has one major fault. The game uses an illogical number of disk swaps. The packaging claims that two drives are an advantage... they're necessary! It takes eight disk swaps to load the game. And even with two drives it'll be ten minutes before you're playing. The frustration doesn't stop there: every time the game comes to an end you have to reload it - great if you have massochistic tendencies.

Buena Vista is a subsidiary of Walt Disney and the superb graphics reflect the high-standard you'd expect from them. Joystick controls are likely to take a bit of mastering and with only three levels you could find that the addictive factor doesn't stand too much bawking. The game strongly resembles the film as it'll be so well received.

still graphics



moving graphics



soundtrack



testing interest



overall 70%

COSMIC PIRATE

PALACE

Arrive - Reviewed, Joystick, £19.95

ST - Available beginning of February, £19.95



4 The ball gate is the place to be - it's surrounded by aliens making it easy to build up your score.

Blast 'em all away, show 'em who's boss. Become a space-pirate and watch the universe tremble at the very mention of your name. The days of the goggle-eyed aliens are numbered. Cosmic Pirate comes from the same guys who created Barbarian (remember that? It was the game which displayed a lot of Maria Whitman).

You take on the role of the infamous Go Manly who, after leading an unsuccessful life, has decided to become a space pirate. Can you blame him - pirates get all the girls and most of the periods!

You begin the game by selecting a mission and launching into hyperspace. By moving around and shooting at aliens you can build up your score. Eventually if you're going to pass through the ball gate (a ball of black holes with a puny fee of 1000 points), brace through the gate - a cosmic sector map appears and you choose a new sub-sector destination. The objective is to find a ship to steal and drag back home for massive bonus points. The sector map tells you (present the correct sector to move into and you then follow an on-

GAMEPLAY

screen marker leading you to the ship. Dashing it requires a concerted blast until it gives up trying to hurt you - very useful.

Assuming you manage this awesome task without your ship exploding into something resembling the quater-maiden beds of Antinea, the next step is to tow the ship back to Planet (your home). On this and you'll receive an excellent pay packet, but unfortunately you're not allowed to keep it. The council, a sort of futuristic Tory government, takes between 90% and 95% of your profits.

With your remaining wealth you can purchase extras for your craft which give additional firepower or improve your speed. Then it's out into the cosmos for another earth-shattering session.



4 You'll need to fire at the ship for some time to destroy it. Dragging it back to base is not only greeted with financial rewards but wins as four you'll find it a useful way of raising your symbols.

CONCLUSION

With your progress and additional ship equipment being saved to disk at the end of each game you soon learn to like Cosmic Pirate. It's a bit like Dungeon Master with action, locating the different planets and watching your score climb, knowing that in time you'll be able to buy a much-needed pony roller, is like saving your pocket money for amiable fun.

The speed of your pirate ship is mindboggling. Everything moves so quickly you'll feel like being up your nose. Graphics and sound are impressive but best of all it has an addictive gameplay. You won't have you coming back so often your pockets will beg for a loan.



4 The cosmic sector map - find a ship and then make some attempt to get to it.

GRAPHICS AND SOUND

The game has been written in machine-code but by making use of the Amiga's hardware the range of colours has not suffered. Dragging pirate ships back to base is almost spellbinding. The background is scintillating as incredible speeds, puns for an artist, and in no time at all you'll be back home.

The pirate ships might look good but the other space craft don't bear much resemblance to those

in Black Rogers. Drawn up as an interdimensional tub-bats they'll leave you questioning the variety of the universe, but they do look hell when blasted.

Sound is good too. Great stereo effects and cooing tones ensure the game is well supported musically. The usual zapping and white noise of most outer-space shoot-em-ups has been replaced with far better spot effects.

still graphics



moving graphics



sound effects



fastest interval



overall 79%

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TALESPIN

First there was STAC then STOS and then there was SEUCK. Microdeal, in the name of common sense, have released the more conventionally-named Talespin adventure-game creator. MARK HIGHAM steps into the vaults to tell you a tale.



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(0726 688020)

So you want an adventure which can take you all the way from the cryptic caverns of an Arthurian legend to the smiling faces of the Acid House gang? Microdeal's Talespin is a do-it-yourself adventure game creator designed to let you build whatever universe you like and make it seem Microdeal even did it.

Unlike some systems, you won't need a degree in mathematics and 2000 years of programming experience to master Talespin. Even the end product, more of a role playing game than your usual text-with-pretty-pictures adventure game, is entirely mouse driven so you don't need to have a secretary's called 'flying fingers, but good and quick'.

What you will need if you're going to create anything half-decent with Talespin is the ability to draw good pictures using either MacDraw or Degas Elite - not a simple task.

Spinning a yarn

Once you've decided on a basic design, the first step in creating your game is to design lots of relevant backgrounds and characters using Degas or MacDraw. You can easily alter the colour of images, resize them so that they're fitting in the window, delete, change or edit colours once in Talespin later on.

Armed with all your picture files, your next move is to load Talespin



■ Talespin is entirely mouse-driven so designing a game is easy. Images are used throughout the program allowing you to import graphics, move, scale and rotate your pictures. Talespin comes with its own screen-editor but you'll want to have created your pictures using Degas Elite or MacDraw before that bit.

and import them. By making use of the screen editor, incorporating such options as scaling, fill, line and an unusual 'lock' feature (a sort of finger-printing equivalent), you can do all the essential 'finishing' to make sure your sketches look great. If Create Page option then allows you to introduce your images. Talespin allocates a separate colour palette to each page - this feature comes in useful if you want to reuse pictures from other screens and make them look different by altering the colours.

Organ donation

The adventure you're aiming at is of the type where the user clicks on a character and up comes a speech bubble saying what's going on and

providing game choices to click on.

To construct your games you simply 'walk through' the plot, starting from an initial screen, you import a graphics screen, choose which of your characters should be shown and position them accordingly. Each character can be allocated a speech bubble which the player will click on - you need to enter the text which is to be displayed, and set up 'variables'. By assigning variables to text entries they're automatically turned into clickable options, determining where the game goes next. You then design the following screens, and the ones they lead to, and so on until the end. You can mix and match backgrounds and characters from other screens so you don't need to design a complete Degas screen for each game you'll fix.

As an example of variables, you could create the variable (DORIS) and set it up so that it would exist in those states: HEART, LUNGS and KIDNEY. Clicking on a certain character when playing the game could then bring up the message "Donate which organ?" followed by the possible organs. Clicking on heart would set the variable DORIS so that it held the value HEART. In this way when you reached another part in the game you would be able to see if DORIS held HEART and display specific messages or go

TALESPIN VS STAC

STAC from Acorn has been around for some time and will now be taken the only creator in the adventure game creator market. STAC games tend to be far more of the usual run-of-the-mill adventure game containing pictures with text. Talespin, on the other hand, offers a role-playing adventure with characters to click on.

By the very nature of Talespin's non-clicking interface the resulting games will all seem similar, but this is not so with STAC. It offers a better built in graphics editor which can be used to create pictures as well as importing in Degas or MacDraw files. In addition, the end-product can be entirely mouse-driven without the need for a text-based execution program.

Which you prefer depends on the kind of game you want to produce. Traditional text descriptions with typed replies are STAC's domain, a more RPG-like text system is Talespin. They both work well.





TRIED AND TESTED

Microsoft released *The Great Adventure* last year which was designed using TaleSpin. The game took 18 months to create but the programmer only worked part-time, so there's hope for you too.



to a different point in the adventure. You need to set up one scene for every possible set of options the player might choose, specifying back-

ground images, characters, speech text and options for each. Every page has a name, and different strands of your adventure join up at a later stage by going to the same page.

Sound effects can be imported from Microsoft's *Play4*, so in theory you could set up a game to use those your reader's screensavers, saving out every time you click on a grinning wizard. (The *EP9-95* *Play4* is a costly but good sound-sampler.) TaleSpin users sampled sound effects in their 'raw-data' format so it should be possible to use samples created by other packages too, although Microsoft are reluctant to specify which ones. It might have been worthwhile to include simple sound effects designed using TaleSpin but no such feature is on offer.

Kind of the late

TaleSpin is not a quick way of creating games. It's undoubtedly taken hours to design enough backdrops and characters essential to a good adventure.

Up to 50 completely distinct screens may be included in one game largely as a result of clever file compression methods. An image used on a page can be re-coloured, re-sized and re-used in another without counting as a full new screen. This gives access to potentially thousands of apparently different locations.

As with all non-programming game creators, the resulting adventures have limited possibilities - unlike the *TILLAGE* program essential for creating a game, there is no way of designing the fact that you've used

BACK TO PAPER

Before you load up TaleSpin and start drawing all your characters it is a good idea to sit down with a pen and paper and decide what you want to do with the game. Laying it out as a tree structure with a start and end point is probably the best way to go about designing your adventure. Drawing lots of hints, lines and doodles will tell you the place to what keeps this sort of game alive so make sure that the branches linking up the tree-structure are as comfortable as possible.

Using the way you can pick up lots of different objects which can then be used in the final part of the game. For example, I've drafted out a wizard who wandered through forest and towns to cut out the much sought after Holy Grail. Before he had performed certain outrageous deeds and proved himself a worthy wizard he could not pick up the final quest if he reached it.

Designing screens using *Pages* or *Resound* is undoubtedly going to take an age, but it is the graphics which make this type of game popular on its own spending the time here. One of TaleSpin's best features is the ability to create a very simple adventure game and then expand on it more and more to turn it into something really brilliant. Maybe even a Format field contender?

Features

1 2 3 4

performance

1 2 3 4

ease of use

1 2 3 4

manuals

1 2 3 4

format value

1 2 3 4

for

- No programming knowledge required
- Graphics liberally reused for variety
- Can incorporate extensive sound FX

against

- Minimal graphics editor, no sound editor
- Only one basic type of game can be created

The adventure ended

When you've finished designing your adventure you can use the *adventure* option to move through the different screens testing all your variables and following the path of the game.

Once you're completely happy you can save it into disk, and call it up to run as an auto-boot program by copying it into an AUTO folder and renaming the game to *STARTTEL*. The player program *TILLAGE.FDS* is freely redistributable, which means that you can give it away with adventures you write and sell.

Microsoft say that they are currently developing a multiback feature so that you'll be able to stretch your game out across two disks. The fact it will really expand on the possible number of screens and could allow you to create an adventure of truly mega-proportions.



■ The Format field was designed in just three hours. Up to 50 screens can be made up using *MacDraw* or *Pages* and then imported into the program. Using the same characters on other screens or similar backdrops you can end up with an adventure across 1000 different screens.

TaleSpin. However, TaleSpin does offer the opportunity to create an RPG type of adventure game, which *STARC* and *STAR* certainly won't. It can't improve your drawing abilities and it won't check your spelling but if you're prepared to spend hours creating good graphics then you can achieve something really impressive.



REVIEW

PROTEXT 4

Protext has been through a number of incarnations to reach version 4, and this latest version has been released for the first time on the Amiga. Could it be the first great word processor for the A500 and above? SIMON WILLIAMS gives his view on posterity, and whether Protext is destined for it.



£99.95 ■ Any Amiga, ST version also available (currently £79.95, will rise to £99.95 soon) ■ Amiro Ltd., 611 Lincoln Road, Peterborough PE1 3HA (0733 689408)

EARLY VERSIONS

The first version of Protext was written for the Amstrad CPC 6032 and CPC 464 under CP/M Plus. There was also a version in ROM for the same machines. The early version lacked many of Protext's current features, the menus, the editing and many of the more advanced internal commands.

Next on the list was a version for the Amstrad PCW word processor, which rapidly became the main alternative to LotusSmart, with some 25,000 units. This in itself was quite a feat, as LotusSmart is supplied free with the PCW.

Version 4, first released for the IBM PC, contained a number of improvements, and was then adapted for the ST and now the Amiga—how say they will only be building on these three implementations from now on.

ers at the features of the program. However, though it's a pragmatic mixture of tutorial and reference which can make it difficult to find information in a hurry, those steeping in that the manual is written for the PC version and the Amiga-specific sections are relegated to an addendum. While appreciating Amiro's arguments for speedy updating of future documentation using this technique (and their internal consistency) it does make some sections of the manual quite awkward to read.

A new installation

Installing Protext on an A500 or a single drive A2000 is simple enough, and basically involves copying the two master disks onto working floppy disks or a folder of your hard disk. On a two drive A2000 with an external drive things are not quite so simple. The Amiga boots an external drive as DF2 not DF1: so you have to know enough about the Amiga's CUI to 'enough' DF2 to DF1: in the startup sequence and then set the Protext configuration for hard drives. Not an easy process, but one which Amiro are to warmly probably by the time you read this. The Amiga program

comes in two versions — a full version for machines with 512k and above and an A2000 version. The appropriate version for your machine is automatically selected when you start up the program. On the ST, a single version runs on all models.

Once installed, Protext will boot from cold to its main display screen. Initially this is divided into three areas, a two line status bar at the top of the screen, a text area and, below a horizontal bar, a row the command area. Pressing [Esc] switches between command and edit modes when the command lines disappear to make more room for text. The status bar shows the normal page, line and column numbers and indicators for edit mode, justification, word wrap, the type of printer installed (there's a wide range) and the time. The last indicator is quite a novelty as it displays its real time (assuming you have a battery backed clock) and have set it up with Preferences and SET-CLOCK.

Edited highlights

Immediately below the status bar is the ruler line and below that lists of space for your machine's screen.



■ Protext command mode includes the detailed CMT command for taking a list of pages of files on a disk (the CP/M and MS-DOS-style DIR does the same thing).



■ A typical Amiga Protext editing screen, showing pull-down menu system

Protext doesn't offer any fancy screen tools but concentrates instead on fast text entry and editing. This is quite a change for an Amiga word processor. Many of them go overboard on fancy tools and offer pseudo-DTP features which may look half decent on screen but are only ever printed out as screen dumps. Without exception, graphics based printing on dot matrix printers is a very slow and for many purposes not necessary.

Where the program is very good is in providing finely editing control you could reasonably ask for. As well as being able to move the cursor in steps of character, word, line, paragraph, screen, page and document, you can transparent advanced characters (think of correcting the common typing errors), change words into capitals or lower case, delete to start or end of a line as well as deleting the whole line, and underline it again if you need to.

Protext provides a number of markers you can set into the text. You can set place markers to return to specific points in a document and

also a multiple marker so you can cycle through a series of markers, perhaps to fill in text at each point. There are also special markers to let you highlight a word and exclude it from a subsequent spell check - useful if there is a proper name or other word you know won't be in the dictionary.

Foreign accents and some foreign letters, such as the German ß, are underlined, and you can insert them directly into your text. A line drawing mode is also included which intelligently inserts pictures and crosswords as you drawing boxes with the cursor keys.

Tables are well handled, with straight and diagonal tabs available anywhere within a ruler line. You can insert as number of rulers within a document, which is just as well as layout such as a hanging indent can only be achieved by setting a new one up and reformatting the original one at the end of the hanging paragraphs. Reformatting can be switched from manual to automatic, but an automatic

reformat only takes effect when you have a cursor key or return. If you're trying to move through an unformatted paragraph in a specific edit point the words shuffle from one place to another.

On the menu

Most versions of Protext include a pretty thorough menu system which covers most of the features you are likely to want from the program. The Amiga version states use of the standard pull-down menu system, and a click on the right hand mouse button brings up a menu bar in place of the window header, as usual. Running through the menu headings gives some idea of the scope of the program.

Project - covers loading and saving files, copying them, displaying a sorted directory, snapping to a new text file (Protext can work on text files at once quite happily) and switching from document to program mode, which affects features like word wrap.

Text - includes search and



replace functions and a word count (beware!), as well as switches for word wrap and justification.

Block - provides all the block functions and a 'box model' switch. Box mode lets you mark off any rectangular area of the document and move it around independently of the rest of the file. Great for tables and multicolumn text.

Line - gives longhand ways of deleting and inserting lines, joining two together, splitting them apart again and copying them.

Print - provides all sorts of printing options, and includes typewriter mode, where you can type direct to the printer for envelopes and things (right up your heart isn't it).

Spell - calls up the spelling checker to check a word or all words in a file. A sub-menu also offers dictionary utilities, including a useful one-gain finder for crossword editors (though, of course, it will only find single words).

Special - deals with markers and footnotes, which Protext will tie to your text for you automatically.

Style - offers an easy way to

ON THE ST

Protext has been available on the ST as version 1.1 for around six months, and was covered briefly in the word processor survey in issue 1. Most of the user needs made in this month's review apply to the new ST version 1.2 as well as the Amiga one, leaving in mind the differences in the two machines' operating systems and the fact that the ST version doesn't run under GEM. This means that the only pull-down menu you can access from the ST version is the Desk menu to get at your desk accessories. You can run any ST program from within Protext, though - programmes could add a source code file, compile it, run the program, then add the bugs but without ever seeing the ST's GEM desktop.

What isn't there in the pull-down menu system for controlling Protext functions. Instead, there's a separate help screen and menu system for many control and layout functions and this can be called from command or edit modes. The same low-level access is provided and F104 commands can be typed from the command line in the same way (LI commands can be typed in the Amiga version).

If Protext works with medium resolution colour and high resolution monochrome displays and computers suit with its main rivals. It's worth this one ST threat, though both these GEM-based packages can incorporate graphics. Protext goes for speed and loads them both as editing and spell checking.





insert any of the text style markers (big, bold, condensed, proportional spacing, super and subscripts).

Macros — provides facilities for recording, storing, retrieving and replaying; macro commands from within Protex.

EXACTLY right

One of Protex's strengths is its pre-programming facility, which starts with the macros and ends with complete executable files which run both within the word processor. Macros can be recorded by typing the actual keystrokes which would perform a function manually. The macro, which is normally assigned to an (Alt) key sequence can then be replayed from any point in the program. For instance, you could make the single keystroke (Alt) take you into command mode, read the words in your document, and return you to your correct editing position afterwards.

Stored commands and command mode commands are the basis of EXEC files, which are effectively short program segments written to automate word processing or mail merge functions. Stored commands take the form of a 16-page followed by a text editor program. They consist of a list of functions from formatting text to structuring programs (input, edit, save, & save conditions) and the list and there are nearly 80 of them. They include the facility to define and manipulate variables, which is particularly useful for mail merging, but has many other applications as well.

Command mode commands are those you would normally type directly into Protex when not editing. Many of them are also available from the menu too. These include editing utilities like CUDMT to count the words in a document, file commands like LOAD, SAVE, and MERGE, and config utility commands like PRINTER, SERIAL, and PARALLEL, which determine the type of printer and where it sends its output. All of these commands can be built into executable files by typing them into Protex and

HOW FAST IS FAST?

So Amiga say that Protex is fast. Just how fast is it? The machine up a 68000 word document (about 200,000 characters) with a given word processing SET limit, and this is how fast Protex managed to find it and replace every occurrence, compared to other leading Amiga WPs:

Protex	Wordperfect	Writeplus	Wordstar
2.5s	5.5s	7.5s	8.5s

text files.

Once they're in there, they can be searched from the command line with the (Alt)C command. This is undoubtedly one of the most flexible features of Protex and opens all kind of scope for application writers around the word processor. Indeed, see the separate panel on Protex Office, a subsidiary package written entirely in the

rather than downloading graphics over the Amiga. For serious word processing, printer fonts will be both faster and more pleasing than the low resolution fonts derived from the Amiga screen.

The requirement to include graphics is perhaps more pressing, given that the Amiga is such a graphics-oriented macro. If Amiga put some in

PROTEXT OFFICE

This is a separate package sold by Amiga (£24.95) for use with Protex. It consists of two parts, Protex File, which is an address-based database, and an indexing system which has the virtue of having been used by Amiga since they first put Protex together.

Both programs are written in executable file and make good reference material for anyone thinking of writing an application in Protex's language. As well as being able to deal with variables or fixed-length records, File supports well with facilities from other programs (you can of course use the Protex language to write your own conversion programs, if necessary). The main advantage of writing Protex as a database for your mailing list is as well as a word processor is that you can edit the data file as a simple text file, using any of the word processor's sophisticated editing and look up functions. Sophisticated sorting facilities are provided by a separate program called PROSORT, and this is remarkably quick and easy to use.

The second part of Protex Office is an indexing system which is ideal for a small business or someone selling lots of forms. All the standard requirements, such as full, discounts and savings are included.

It contains extensions of Protex, in any of the many pages, and a good illustration of what can be done with the Protex language.

NAME CHECK

Amiga, the company which produces Protex, is named after the kind of the chess in J.R.R. Tolkien's The Lord of the Rings. The company also produces emulators, it compilers and other language products.

Features

1 2 3 4 5

performance

1 2 3 4 5

ease of use

1 2 3 4 5

commands

1 2 3 4 5

format value

1 2 3 4 5

for

- Extremely configurable with good low level access
- Built-in command mode language for automatic editing
- Two file editing
- Spell checker and mail merge included

against

- Can't incorporate graphics into documents
- Can't make use of Amiga fancy fonts

Protex EXEC language.

Write on?

Protex really is the best text processor on the Amiga, with two problems — that you don't want to include graphics in your documents and that you are content to use your printer's fonts.

adding new EXEC functions it might be possible to dump graphics screens from within Protex, but it won't be easy and there's no form of integration built into the software.

Protex deserves to be on anyone's shortlist for an Amiga word processor.



- The spell checker can run through this as you edit. In this mode you can see the suspect word in context and ask for replacement suggestions. On an Amiga, you need 128k of memory to spell check within the editor — on an MS-DOS you have to quit Protex and run a separate utility. If you have the memory, copying the dictionary to RAM speeds checking up dramatically.

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SCULPT 4D

The Amiga has a startling range of animation packages. The latest money-is-no-object package is comparable to heavy-duty professional affairs. Joe Benzing, creator of many fine animations, looks at this monster package.

JARGON BUSTER

If you don't have a clear idea of what rendering is, then Sculpt 4D probably isn't for you. But there's a quick jargon-buster guide:

EDGE FRAMES - The first stage of a model of a 3D object. Every edge is drawn as though it were a model made of wire.

WIREFRAMES - Moving to the surfaces of the wire frame model with solid colour.

TEXTURE - The look of a surface, metallic, glass, matt etc.

RAY TRACING - The final stage of a 3D model. You specify where the light source is (eg, the sun in the sky), and the program works out where all the shadows and reflections should fall.

GRAPHICS BIBLE

Fundamentals in Computer Graphics by JD Foley and A Van Dam, according to many professional computer artists and animators, is the bible when it comes to explaining graphics terminology. The book is published by Addison-Wesley, ISBN-0-201-14460-9, and costs £26.95. It may have difficulty finding the funds to Computer Manuals Ltd on 021-758-5800.

£1448 (upgrades from Sculpt-3D - PQA) ■ Amiga with 1MB and two floppies required (2MB recommended) ■ Byte by Byte/Amiga Centre Scotland, 4 Hart Street Lane, Edinburgh, EH1 3PP (031-557 4242)

Here's the latest in the Sculpt ray-tracing range from Dr Eric Strydom. It's probably one of the most advanced - apart from the obvious price hike - have been added since the 3D version. Might I have the attraction too is a new manual (which includes tutorials), 80000 and 64000 microprocessor versions of the program and a data disk. Sculpt Avenue was born part of the package, you no longer have to finish your work for this.

Review windows - which represent your 3D world and first became famous in Sculpt 3D - are present. Loading and saving features now benefit from a proper file requester. There are one-step operations with drawer, file, and disk volumes. It is even possible to resize or delete

files within the requester. Edit Modify Faces now handles object sets (polygons including colour, texture and smoothing). A lot of the more commands now have a key equivalent. And there's the facility for setting up key strokes to suit your requirements. (This is simply done by holding down the [Alt] key then pressing the alphabetic key of your choice.)

To place fonts in Sculpt 3D's In-view system required lots of time - even if you used (Auto)3D Fonts - because the fonts have to be loaded up in your subpicture. Not so with 4D. The Project menu has a requester called Project Load Font. Providing any key that has a graphic symbol assigned to it - or even the last has been loaded - transfers the required character to load into the current window and the cursor is advanced to the right by a character space. The scale is automatically assumed by the height of the current window. You can still use your fancy 3D fonts as well. The whole process really is neat.

Script files are also possible. These are extremely useful for creating programs that generate very sophisticated scenes. We will have to leave solid programming skills to use this facility though.

The image modes have had some major changes. There are still painting, sketch, snapshot, and photo options. But the snapshot, photo and rendering times have been improved two-fold. This goes for both the 80000 and 60000 versions of the program. Several scenes that were originally created on the old Sculpt Avenue were rendered using 4D in some cases the time to produce the picture was cut in half. Of course, there is a price - a scene with 6000 faces requires nearly 4Mbytes to render to photomontage quality.

Smart rendering

'Scene painting' and 'scene rendering' are two new options. Scene painting yields a result much like the original painting. Scene rendering is useful for objects that cover a relatively small portion of the image or that have many intersecting faces. Scene snapshot is also provided. This is best used for speeding up solid mode operations. Realism is added by playing shades smoothly across faces. The only features that work in this mode are matt and glass. The ultimate mode is still photo mode as shadows and the like can be included.

With rendered scenes built out rapidly, the rendering produces lovely smooth images. There is still the option of using up to 24 bitplanes, which gives you up to 16 million colours and resolution of up to 1000x1024. Naturally your Amiga can't display this. If you can find someone with a Hi-scan PCU or a 32bit imaging system, some really neat output is possible. A frame buffer will be needed for 6000 data animations.

In the Edit Faces menu there is a new feature called 'metal', as expected, it combines the properties of a shiny and reflective surface. Some of the light is reflected and some is scattered, giving a metallic effect. Within the scattering menu, Phong shading is now provided - good for curved surfaces.

Thanks mirror

The Help file lets you build objects with lateral or spiral symmetry. For



■ Joe Benzing's Lampo animation - a fully rendered, fully ray-traced still projected with Sculpt 4D shown here - was up the wire frame stage of the August 1988 Amiga Centre Scotland Animation Show. Just look at it and you'll collected a runner-up prize at the time even though the work was nowhere near complete. The still scene consists of two lamps performing a choreographed dance.



■ **Jazz** is another of Joe's creations. This one took 45 minutes to render and lay track - still, you, that was on an accelerator! Amiga. The Hurricane Hunter Board used comprises a 68030 and 68881 multi-processor. Cost is around £1144 from the Amiga Centre. Jazz costs £499 software and is displayed in full screen mode.

instance, a horse (three), Catherine wheel or real spring. This is all handled by a central curve. The control curve is made of a series of linked edges and vertices. Each edge of the control curve corresponds to one complete revolution, or half, of the helix. The length of each edge of the control curve will determine the length of the corresponding twist.

Finding the centre of an object has been made easy with the new coordinate command. Along with more conventional items like snap to nearest vertex and snap to grid, there's snap to the centre of gravity of an object.

The manual contains handy sections on creating animations for walking from hard disk and floppy. It also includes which lets you move animations from hard disk to floppy. Essentially the utility copies animations at convenient locations. Really nice if your work is on the large side. If you have a graphics device there is a high resolution mode to retain 40 background colours. There's also the facility for using full video if you intend recording to tape or using a graphics. There are drivers for both large frame recorders and frame buffers. Both the driver and source are obtainable from Byte by Byte in the States.

Set your sights

With the Coordinate menu there is an automatic tape measure. You can use the tape measure to scale objects precisely. There are two and three gauges, one per side. Clicking on one gadget will place one pair of markers at the current cursor position. If the vertex is moved the tape measure readout will be updated. The Protractor is used in much the same way, but it measures angles and not distances.

Grid tool, which provides a three dimensional grid, is of great help.

Grid size can be set and configured to suit your needs. You can even use

all animations are guaranteed to enjoy Sculpt 4D.

ANIMATION ON A SHOESTRING

Not everyone has £1500 or more to spend on an animation package. Here are some alternatives and where you can get hold of them.

TURNED SLIDER contains object editing and animation. The object editor is very weak and does not have the flexibility of 4D. Very fast update times are claimed though. The program provides texture mapping, and a reproducible data mode. It also hosts a terrain module. **Impulse/MR Marketing** on 0200 444433 call 8 for £129.95.

RED BEACONS 3D doesn't provide updating facilities, but does support RGB and fullbright modes. Panning results can be produced reasonably easily. **MR Sculptor 80** you can create object, camera, and motion files. **Videovision** really shines when used with **Modeler 3D**, available from **Impulse/MR Marketing** for \$147.95.

CHARACTER APPRENTICE is a Disney-style animation package that doesn't use templates to create objects. You could quite easily create Roger Rabbit and animate him. Try this with 4D. The character is created, its action defined and then direction and reference are added. Its obtainable from **Realtime Systems/Amiga Centre** (Scotland) 031-937 4342 at £195.

POWERS IN FLIGHT 3 is another 3D/3D animation package. This package supports hierarchical animation, plane shading, texture mapping and 3D support of backgrounds and foregrounds. 3D is excellent value for the money and is a great way to get into 3D animation. It costs £79 from the **Amiga Centre** (Scotland).

your own measurement systems.

The only major fault with 4D - and, honestly, it's not that major - is the lack of texture mapping.

Sculpt 4D is much smoother and faster than earlier versions. Even its standard 68030 mode the improvement is noticeable. Though, as is to be expected, the 68030 version is more productive. The tools have been improved and, as mentioned earlier, there are a lot of useful new abilities.

But the question has to be asked: who is going to buy it when it's priced over £150? Certainly not the casual user. It takes 3D design seriously and requires high performance regularly then 4D has got to be the one. It's a first class product from the object editor to the animation side of the software. Universities and profession-

for

- Object editor is fantastic
- Rendering range good
- Support for Amiga 5000/50 (collaborator towards)
- Comparable to 3DMax package

against

- No texture mapping (overlapping pictures unusual but)
- No refinement index for ray tracing work

PHONGY STUFF

Phong shading is a method of smoothing curved surfaces visually on screen using ray tracing. It was the first really clever algorithm to tackle the shading problem, and was devised by a Japanese mathematician, Dr Phong Bui-Tung, circa 1975. Phong shading isn't 100% successful as the very top edges of the spheres or cones are flattened. Another popular method of sphere shading, first produced in 1968, around 1971. Each method has its pros and cons and trade-offs - it seems the perfect filling routine would be a combination of the two techniques.

OBJECT DISKS

Byte by Byte of Devonshire Place 5, Tel: 0753 84442 Capital of Texas Highway N, Austin, TX 78758 in the States sell several disks full of object data. For instance, there's the **Orbiters/Space Station** set which allows you to create your own shuttle scenarios. A whole range of objects disks are planned which might be distributed in this country by the **Amiga Centre** (Scotland) 031-937 4342.

Features

1 2 3 4 5

performance

1 2 3 4 5

ease of use

1 2 3 4 5

creativity

1 2 3 4 5

format value

1 2 3 4 5

Glik-ST

**Unit 2 Willowlea Farm,
Spout Lane North, Starveall Moor,
Staines, Middlesex TW19 9NF
Telephone 01753 653222**

[illegible]



SCREEN TRICKS

If you want to write a *StarGLider II* beater, then you'd better pay attention. **RICHARD MONTEIRO** and **JASON HOLBORN** provide you with all you need to know on how the ST's and Amiga's screens work, plus loads of tips and tricks. Not to be missed.

A tterange high processing speeds and large memory configurations, the most fascinating aspects of the ST and Amiga computers are their spectacular graphics capabilities. At its highest resolution, the ST can display 640 by 400 pixels. Only two colours - black and white - can be used, but that's all you need for word processing, DTP and CAD. The ST also has two colour modes: medium resolution (640 by 200) and high resolution (640 by 200) which can display four colours on screen and low resolution (320 by 200) which manages 16 colours. A glorious palette of 512

colours is available.

The most common resolutions on a file Amiga are 320 by 200 pixels and 640 by 512 pixels with up to 16 colours on screen. If you have the number of on-screen colours, you can have resolutions of 640 by 256 pixels and 640 by 512 pixels. Extra modes such as overscan, extra buffers and hold are mostly (BASIC) are also supported, but the actual mechanics are too complicated to cover in these pages.

A screen on the Amiga is built up using a system similar to that used by the Apple II - namely by using bit planes. However, unlike the II, the Amiga programmer is able to specify how many bit planes are used by a specific screen. The number of bit planes provided in a screen dictates the number of colours available. For example, a single bit plane screen has two colours whereas a five bit plane screen allows a maximum of 32 colours. The equation is simple: 2 to the power of the number of bit planes equals colours available.

As screen memory is organised with immediately obvious resolution is fairly easy to handle, but at times of complications arise when colour arises on the scene.

High resolution
Immediately after turning the ST on, an area of 32K is initialised at the upper memory border. The memory address starts at \$940000 (\$90000 on a 500, \$94000 on a 1000) on a 1040 and \$940000 (\$94000) on a Mega 2. Check the panel for more details on this.

High resolution mode is the easiest to deal with: it only has one bit plane. This simply means that colours cannot be represented on screen. A pixel can only be black or white (on or off). Each pixel in this mode is represented by one bit. Hence each byte takes after eight pixels. It's not hard to work out that the total memory used, in bits, comes to 256,000 (640 multiplied by 400). Exactly 80 bytes are required to display one horizontal line of screen information in this mode.

To plot a single pixel - say the first pixel at the start of screen memory - you must use something like `POKE $,128` or `POKE $,$20000000`, where `$` refers to the start of screen memory. If you want to plot a pixel one position to the right of the extreme left, use `POKE $,64`. To plot a pixel another place to the right you must use `POKE $,32`. Check the panel on the binary counting system if you can't see how this works.

Placing memory location `$+1` with 128 for decimal (\$40000000) plots the ninth pixel on the top row of the screen. The following (not BASIC) snippet starts by plotting a pixel at the top left of the screen; the pixel slowly travels across the screen. See if you can follow the logic: (high res on)

BINARY COUNTING SYSTEM

Data of any kind which is stored in a single memory address is referred to as a binary byte, and can be represented by any number between 0 and 255.

Each of the eight digits in a byte is termed a bit. Each bit in a memory byte can be either 0 - in which case it has no value - or 1 (its value depends on its position within the byte). If the bit to the extreme right of the byte (000 or least significant bit) is set to 1 then it has the value one. A bit set in the second position has the value 2, the next 4, and so on through 8, 16, 32, 64 and finally 128 (the most significant bit, or MSB).

(Bit values)

128 64 32 16 8 4 2 1

1 1 1 1 1 1 1 1

7 6 5 4 3 2 1 0

(Bit numbers)

The total value of a byte can be found by adding the individual values of the set bits. For instance, binary 11011001 equals 175 (128 + 64 + 16 + 4) in decimal.

ST SCREENS

The amount of memory used for an ST screen display remains constant no matter what resolution you're at. This seems reasonable because high resolutions have lots of colour, low resolutions have lots of colour. You should have guessed by now that both colour and resolution determine screen memory requirements. The equation is: resolution times colour equals memory.

Reduce the resolution and you can increase the amount of colour. The opposite is just as true: in theory this is possible, but as you know in practice only three ST resolutions exist.

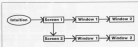
Total screen memory requirements on the ST amount to 32K. The



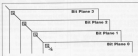
bit planes individually doesn't tell you a great deal, but if you combine them as a binary number the colour value of the pixel can be ascertained. This explains why all pixels of a particular colour are changed when you alter the value of their colour register. Bit planes cannot tell you the colour of an individual pixel, only the colour register number that that particular pixel will fetch its colour information from.

The Amiga's screen memory is dynamically allocated and as such it is needed. The only certainty with screen memory is that it is always somewhere within the first 512K of RAM. So how do you keep track of your screens and windows? Porters of course.

The Amiga uses two types of pointer for screens and windows. The *WinPort* is a pointer to a screen and a *WindowPort* is a pointer to a window. Two types of pointer are required as windows are always displayed within a screen, while it is perfectly possible to open a screen with no windows, it



■ Figure 1 - How the Amiga's 'Initiation' opens a screen with two windows.



■ Figure 2 - Think about bit planes this way and you may be less confused.

is impossible to open a window with no screen. All the screens and windows are linked using a linked list.

For example, if you have two open screens, that each have two windows within them, Initiation the Amiga's ROM system would view them as in figure 1 above.

All drawing functions within the ROM kernel need to be told what screen or window they are to work in. The most common pointer used is the *WinPort* pointer as all windows and screens must have one. All the following examples are written in Amiga BASIC; the theory is exactly the same for most other languages such as C and Assembly.

Painting pixels

The simplest, and most legal, way of writing a single pixel to the screen is to call the ROM kernel function *WritePixel(1)*. Use all drawing functions within the ROM kernel, *WritePixel* needs to be told where to write the pixel. In this case a *WinPort* pointer is required. In AmigaBASIC this is easily found by reading the value using the *WINPORT* command. The value returned is 12345 which means the variable that holds it must be declared as long. This is done by attaching %L to the end of the variable name. The *WinPort* address can be read using the following:

```

WinPort% = %WINPORT%

You can now write directly to the
window using the ROM kernel func-
tions. The following Amiga BASIC pro-
gram will write data randomly to the
screen.
LIBRARY "graphics.library"
SCREEN 1,640,350,3,0
WINDOW 1,"Totally Window",0,0,
640,350
WinPort% = %WINPORT%
FOR COUNT = 1 TO 1000
X = INT(RND*640)
Y = INT(RND*350)
CALL WritePixel(X,Y,WinPort%,
0,0)
NEXT COUNT
LIBRARY CLOSE
  
```

GETTING IFFY

One nice feature of the Amiga is its standardised file format called IFF. IFF covers nearly all types of data files ranging from picture files and animations to text and sampled sound.

The actual structure of IFF files unfortunately is rather too complex to cover completely within these pages. Look out for that in a future issue of *Format* so we'll only look at how IFF ILM (Interleaved Bit Map - picture files to you and may like) has the actual colour information of a picture.

All the various bits of information needed to render a picture are held in specific chunks. The advantage of this system is its expandability. The IFF ILM file in particular has been updated several times since it was first adopted, but ILM remains compatible with the original version. Each chunk within an IFF file has a four byte header containing the name of the chunk. If you view an IFF file as a hex dump then you'll be able to spot these chunk headers easily as they are English text bytes.

The chunk that holds a picture's colour is called the Colour Map and has a chunk header called CMAP. Reading the colour information is therefore only a matter of searching for the string 'CMAP' within an IFF file. The actual colour map chunk is made up as follows:

- 4 bytes Chunk Header 'CMAP'
- 4 bytes Chunk Length
- 1 byte Red value of colour 0
- 1 byte Green value of colour 0
- 1 byte Blue value of colour 0
- 1 byte Red value of colour 1, ..., etc.

The three bytes holding the red, green and blue information need to be read to find the colour contained in a particular colour register. The next step is to divide each by sixteen. The reason for this is that only the last four bits of a byte are used, the first four must be ignored.

The program below shows a simple method of changing the value of a colour within a picture file. The program allows you to change the value of the background colour (colour 0) and then save the results written to a separate file. The program uses

a rather long time to read the entire IFF file so don't worry if your Amiga seems to be taking an age to finish.

```

OPEN "file name: test1.CMAP" FOR
APPENDEND = "test1.ILM"
OPEN:OPEN = "test1.PIC"
OPEN:OPEN FOR INPUT AS #1
OPEN:OPEN FOR OUTPUT AS #2
PRINT "PLEASE ENTER RED VALUE (0-15) ",
;
PRINT
PRINT "PLEASE ENTER GREEN VALUE (0-15)
",
;
PRINT
PRINT "PLEASE ENTER BLUE VALUE (0-15)
",
;
PRINT
Print:CMAP = 0
Channel = "CMAP"
WHILE NOT EOF(1)
Channel = INPUT(1,1)
COLOR Channel
loop
IF Print:CMAP = 0 THEN
PRINT "Channel's First Colour Map"
ELSE
PRINT "OK, Job Done."
END IF
CLOSE 1
CLOSE 2
END
Channel:=
Channel = Channel + Channel
Channel = INPUT(Channel,1)
IF Channel = "CMAP" THEN
Print:CMAP = 1
PRINT #2, Channel
GOTO UpdateColourMap
END IF
PRINT #2, Channel
RETURN
UpdateColourMap
Channel = INPUT(1,1)
PRINT #2, Channel
Channel = INPUT(1,1)
Channel = Channel*16 + (%CMAPChannel%)*16
+ (%CMAPChannel%)*16
PRINT
  
```




ROLL AR

If you drive more than 10,000 miles in a year, Next Base claim their new ST product will save you quite a few pounds. SIMON WILLIAMS, no mean achiever in the mileage stakes, maps out his progress.

£149.50 ■ ST only, all models ■ Next Base, Unit 18, Central Trading Estate, Staines, Middle TW18 4XE (0794 460077)

MAINLAND ONLY

Autocode claims to cover all roads in Great Britain. This means, sadly, that roads in Northern Ireland are not included. By rights, it should also mention that the Isle of Man is excluded too, in fact, you can start from any old place or town on the island, and the program will also include the ferry crossing.

Taking of ferries, the time for crossings is included in journey suggestions, but any sailing times or special cases (e.g. no ferries) will need to be taken into account.

Autocode can claim to be a unique product. It's purported to work out the best routes between any two places in Great Britain and provide detailed directions for driving from one to the other. In addition, it can display and print a map of the suggested routes and zoom in on any area of the country. You can identify cities, towns, villages and roads or what is effectively an electronic map.

The program is supplied on three single-sided disks, with a slim but comprehensive manual and a map station card. Two of the supplied master disks contain the digital map data, while the other contains the pro-

gram and is keyed as a form of protection. This means that even if the program is installed on a hard disk, the floppy still has to be used to start Autocode. Although Next Base offer to replace a damaged program disk for a 'nominal fee', it's still annoying to have to use the master each time the program runs.

The map data can be combined onto one disk if you have a machine with a double-sided drive, and the program then requires no disk-changes while running. On a 3 Mb



■ Details of a particularly narrow junction

ST or above, the map data is loaded and run from memory, which speeds things up considerably. Autocode automatically sensors the machine and drive configurations, and installation on all machines is well explained in the excellently written manual. Although only a film booklet, it is full of illustrations and written in an informative style which never patronises.

Naming of paths

The program runs under GEM and starts with an unimpressive blank screen and four pull-down menus. The Data menu shows the credits, and it's interesting to note that parts

of the code are copyright Mark Williams, author of one of the best known C compilers on the ST.

The Options menu lets you pick measurement units (miles or kilo-metres), type of route (shortest, quickest, cheapest, etc) and one of the five typical vehicles. The type of vehicle is in fact a shorthand for your own speeds, as each of the headings (CV, normal, full-time, GT) and (not) corresponds to a set of speeds on different types of road. These can be edited separately from the Journey menu and saved from the Actions menu.

The Journey menu provides most of the meat in specifying your actual route. Journey Details calls up a separate window where you can specify starting point and destination, up to four places to visit (with optional stopover times), four places to avoid (including nasty road junctions) and a required departure or arrival time. These times are significant when it comes to printing out your directions, as Autocode will supply a timetable working forward from departure or backwards from arrival.

The Road Preferences menu lets you declare any tolling likes or dislikes for Motorways, A roads, B roads and changes of road. These preferences can dramatically effect the routes the program selects. The Speed List window displays the speed attributed to each of the five sample vehicles in the Options menu.

The third menu, Action, is where the work is done. Calculate sets the program searching for the routes you've requested. Route Test displays detailed directions for any of these routes. Route Map displays a zoomed map with the routes marked on it and Print route prints directions.

There and back again

To match for the theory, Having entered several typical journeys, it was impressive to watch the speed with which Autocode calculated each route. Even on a 520BT with a long route Lundy Isd to John O'Gaunt each route was found in well under a

OS SENSE

Autocode is the first software package designed to make use of the Ordnance Survey's digital map data. The government body which started its mapping the country for the military now told some years back to start making money. It set upon the clever idea of marketing its map data in digital form (the map is currently stored in hard).

Next Base licensed the maps from the OS and had to download them from the reels of magnetic tape on which they were supplied, onto many floppy disks. The next stage was to integrate the maps into the program itself, tying the data in with the search algorithms. Finally the data had to be heavily compressed to reach Next Base's target of running the program on a single drive PC, and hence 520 BT.

The way the maps have been tied in means that new versions can be integrated in as easily as that Autocode can be kept up to date with the latest versions of OS maps.

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DELUXE PRINT II



£49.95 ■ All Amigas ■
Electronic Arts, 11-45
Station Road, Langley,
Slough, Berks SL3 8YN
(0753 49442)

Deluxe Print II sets out to help you create colourful signs and posters on your Amiga - as much you can think of it as a finishing stage for a paint package. A typical scenario would be that you decide you want a poster advertising your Valentine's Day Bare Dance. Using your paint package, you can draw all the discrete parts that will eventually be used: a stylised heart scene, a few love-hearts, and a miniature City Clock (deluxe!); name you on - Ed! You save all the elements individually and then compare them with Deluxe Print II.

OBJECT LESSON

There are four types of objects you can put on a page: text, text-borders and backgrounds. The background is simply an image that you've previously prepared in a paint package. 'Texts' are what Deluxe Print calls its basic graphic elements. An Art disk provides you with a fair variety of clip-art, but it tends to be a little off beat: daisies, penguins, slices of IBM's Apple Pie... You can place any of these on your background, or import ones you've prepared elsewhere. Icons are always 44 by 56 pixels, although they can be rescaled once in place.

The difference between Deluxe Print and a standard paint package is that the icons are stored as discrete objects, in other words, if you place an icon over a background, the covered background will reappear if you move the icon later on. This is particularly useful for text.

Instances

1 2 3 4 5 6 7 8 9 10

performance

1 2 3 4 5 6 7 8 9 10

when not used

1 2 3 4 5 6 7 8 9 10

manipulate

1 2 3 4 5 6 7 8 9 10

1 2 3 4 5 6 7 8 9 10

1 2 3 4 5 6 7 8 9 10

1 2 3 4 5 6 7 8 9 10

1 2 3 4 5 6 7 8 9 10

1 2 3 4 5 6 7 8 9 10

1 2 3 4 5 6 7 8 9 10

1 2 3 4 5 6 7 8 9 10

1 2 3 4 5 6 7 8 9 10

1 2 3 4 5 6 7 8 9 10

1 2 3 4 5 6 7 8 9 10

1 2 3 4 5 6 7 8 9 10

1 2 3 4 5 6 7 8 9 10

1 2 3 4 5 6 7 8 9 10

format value

1 2 3 4 5 6 7 8 9 10

1 2 3 4 5 6 7 8 9 10

1 2 3 4 5 6 7 8 9 10

1 2 3 4 5 6 7 8 9 10

1 2 3 4 5 6 7 8 9 10

1 2 3 4 5 6 7 8 9 10

1 2 3 4 5 6 7 8 9 10

for

- Automatic calendar generation
- Good range of large text fonts
- Text/graphics stored as 'objects' for easy modification

against

- Doesn't directly support 32-pin printers or HP Patters
- Can't edit in full-size view
- No point-package type print editing tools
- Nothing a good paint package can't do

Art packages are wonderful things... but while they're great for painting pixels, they're usually pretty weak on adding text to your creations. BEN TAYLOR colours in the grey area between paint packages and DTP.



■ Making up a calendar is DTP's. The text for the dates was automatically calculated by the program after being told the month and year. Other graphics were then superimposed. The borders that enclose the same icons are being reflected.

When you start, you are faced with a blank work area filling the left half of the screen. You can choose whether to work on a single sheet, a 'butter' (2 sheets placed end-to-end, a disk label or a 4-in card. This format sets up a page of four panels so that when folded in quarters you get a greetings card. An extra handy

print it is very time consuming. Once you've placed text on your background, you are free to change its size, font, colour and position.

Finally you can set a border around your image - this is effectively an icon which is repeated and printed around the outside, so you can frame your composition.

Putting out

Once you've got the various elements just right, you can print your masterpiece. Mindboggling, the printer drivers supplied are based on the obsolete version 1.2 set; there is no support for the HP PaintJet colour printer, nor any 36 pin dot matrix. It's true you can copy other drivers onto your hard disk, but the manual doesn't give any clues.

It is only possible to view the page in its entirety on screen - very annoying as rendering is about 40% of actual size. You can zoom in for pixel-perfect proofing, but you can't do any editing unless you return to the full-page view.

Deluxe Print II is a neat start-up program. You can't do much around graphics, you can't rotate text, you can only awkwardly work with imported pre-created graphics. It offers little you couldn't do with a good paint package and a selection of public domain fancy fonts.



■ Some of the poster-size fonts supplied with Deluxe Print II

format is 'Calendar' - a page filled with the dates of any month you specify.

Deluxe Print's main area of interest is that it provides good text fonts suitable for use in large posters. Curiously the fonts are called Cornelia, Patricia, Iva and Deborah - there must be a story behind that. Characters up to two inches high with no jagged edges are possible; larger than that and the edges don't look so smooth. You only type one line of text at a time onto your poster. Free the headlines, but if you want any small



Stand-alone STOS

Users of STOS BASIC will find that they cannot make stand-alone

STOS

The Game Creator

Published
by SAGE



Version 2.0 © 1989 by S. Henderson

DESKTOP

When the frost sets in and your ST starts to shiver then there's only one thing for you to do - stumble down to the Format saloon for all the latest tricks and tips to keep your ST warm through the winter weeks. This month's winner is **R. Henderson from Liverpool** for his STAC tips. £30 will be on its way once we find the editor's wallet.

PRG programs (but there is a way around this problem).

1) Copy the STOS folder from your Language Disk onto another disk using the desktop copying procedure (do not use the 500-SCPM ecosystem).

2) In this new folder delete the

My COMPACTOR and EDITOR (BASIC) to save space. Performing this operation will cause the standard Desktop colour to be used in your programs.

3) Save your program with a PRG extension from the Editor in

the normal way.

You can now execute PRG files from the Desktop.

Also, if you want to load from drive B then type in `FORMAT B` and press the reset button.

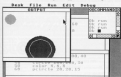
Oh there

Wibble, Wobble, Wobble.

BEGINNER'S CORNER

Back in the good old days when all you had to do was turn on your Dragon (2) and up popped Microsoft BASIC (those aren't the old days - 1986, programming, your machine was almost as easy as pulling the hairs out of your tail warts). Then suddenly some bright spark comes up with the idea of making a 24-bit machine which can be used to play some brilliant games and launch a really powerful BASIC. Now this would be fine if they didn't make it so complicated that you need a degree in BASIC to be understood how to load up the program.

If BASIC comes loaded with your ST and although you might not be able to write Garghler 8 or 9, it's still a fairly powerful language. Its windows are considered by many to be one of the best features especially when it comes to sorting out what's gone wrong with your programs. But what makes ST BASIC useful is also its major disadvantage. The windows are notoriously difficult to master. With two windows designed to editing, listing, windowing and command line entry, not only is it hard to get them all on screen at once but it's also damn near impossible to remember which one it is that you're supposed to be looking at.



WINDOW MANIPULATION

The COMMAND window is the one into which you type your programs. It doesn't really seem to be very hot so it's often a good idea to size it up a little bit and shift windows. As you enter your basic instructions these all appear in this window. When you want to run this program the next step is to hit `GO`. Listing occurs in the LIST window. Often, placing this one above the command window so that you can see at a glance of your program as possible is a good idea.

Tabbing LIST causes the LIST window to appear. All other windows which were in front of it will be sent behind this window, making it possi-

ble to see the relevant section of your program and move the cursor around for editing.

Finally, the output window responds to all directly-entered commands and handles all the output of your programs. This might seem confusing but by using up this line you can edit your program and view all the program output at the same time making it easy to see the necessary changes (assuming of course that your program doesn't run perfectly first time).

CONTROLLING WINDOWS

Each of the separate windows are allocated a different number. Window 0 is the EDIT window, 1 is the LIST window, 2 is the OUTPUT window and 3 is the COMMAND window. There might not seem to be much point to this but it comes in very handy when you want to clear a window. The CLEAR command when followed by a number from 0 to 3 will clear the corresponding window. This can often be useful when it comes to obtaining a clearer listing or if you are making use of the OUTPUT window.



Another command, the FILL command can be used, when followed by a number from 0 to 3 to increase the size of the specified window so that it takes up the full screen. This is often useful for looking at a listing or when you wish to test a program and be able to see the full screen in operation. Should you ultimately the COMMAND window with a full screen then it will disappear when you next type a character.

These commands can also be used in an ST BASIC program (but since you can only display in the output window then there's not a lot of use in dealing with any window other than 2).

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WORKBENCH

Flushing Workbench

Life with a 512K Amiga can be a struggle to say the least. When you run a program from the Workbench, the free memory display before you loaded the program and after you have quit it never seems to quite tally. Where do those few extra bytes wander off to? All can be revealed...

The Amiga's memory is managed by the multi-tasking executive that maintains a list of free memory "pools". When you load a program into the Amiga, the program will require some form of workspace for storing its own data etc. To get this workspace memory, a program has to "ask" the multi-tasking executive for the memory and if there's enough memory around EXEC assigns it to your program.

When you quit from a program, all this memory should be dedicated to the program itself. Dedicating another your program taking the Amiga that it has finished with the memory and it can be reused by other programs. Many badly written programs often fail to properly release this memory and therefore the free memory count is never completely restored.

There is a way around this, however. The Workbench program has an undocumented feature that allows you to force the unused workspace to be returned. To access this feature you will have to firstly change the Start-Up Sequence of your boot disk. Once you are in a text editor, like the Amiga's own ED, search for the

Another collection of handy tricks and tips to help get your Amiga over that New Year hangover. Word processing, painting, programming - if it ain't here it ain't worth knowing. Send in your Amiga tips and you could pocket £30! This month's lucky winner is Darren Taylor from Coventry.

A FLOODY GOOD TIP!

One failing of the AmigaDOS ROM command is that it will continue filling the screen until it is completely surrounded by a boundary of a particular colour. This is not particularly useful if you are writing a program such as a paint package that requires only an area of a particular colour to be filled.

There is however a way around this. The AmigaDOS Paint command calls the ROM Kernel function Flood(). This ROM kernel function offers two different modes of operation. The first works in the same way as Paint, but the second is of more use as it only fills an area of a particular colour and then halts if it encounters pixels of a different colour.

The code to access this enhanced flood function is as follows:
LIBRARY "graphics.library"
EX = 000; FS = 000; FILL22222222 = 2
FLOOD 25, 71, FILL22222222
LIBRARY CLOSE
END

```
FOR FLOOD (x-coord, y-coord, fill)
START
FILL CL, 0, 0
FILL CL, 0, 0
FLOOD (x-coord, y-coord)
MODE = 1
CALL FLOOD (x1, y1, x2, y2, c)
MODE = 0
END
```

Before this program can work properly, ensure that the file GRAPHCS.LIBRARY is present within the current directory. This file can be found within the Workbench drawer on your Extra disk.

The variables, X1 and Y1 are the coordinates at which the fill starts and X2 and Y2 are the coordinates at which the fill colour. The colour of the pixel at this position is used to specify which pixels are to be filled. For example, if the pixel at that point is red, only connected pixels that are also red will be filled.

Darren Taylor
Coventry

line that reads: LookAt. This line must then be modified to read:
LookAt -delay

When you now start your Amiga, everything will appear to load as per usual. LookAt can be described however as hidden

away in the Workbench menu bar in an extra pull down menu. To access it, hold the right mouse button down in the normal way and move the mouse pointer immediately to the right of the 'Special' menu - the extra menu will show itself. This extra menu will contain the following menu items:

Debug
Flash Like

The first menu item, Debug, is strictly for software developers, don't select it or your Amiga will lock up. The menu item at read aligned is the Flash Like option. If you select this, the Amiga will attempt to free any memory it can.

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Protect secrets

Those of you who have read the review of Protect for the Amiga in this month's Format and have decided to take the plunge and test yourself in the excellent Word Processor, may be interested to hear that hidden away within the depths of its code are several rather strange features.

The first, and probably most interesting feature is the 'Pass' screen. At the Protect command line, type `more` and press the return key for a rather strange effect.

The second peculiarity exists within the Protect help function. If you're using a single drive machine, you'll have to insert your Dictionary disk first. Now type either `HELP`, `LIST` or `HELP`



■ The mysterious extra Workbench menu exposed at last

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GOLD DUST

Commodore outselling Atari?

Ranking in the post-Commodore world, from its new product releases, Commodore is hoping to make a killing in the pre-Christmas setup in the US. By the time you read this, Commodore will probably have achieved its intention of doubling US sales during the fourth quarter, thanks to some really TV advertising on MTV and several other US TV stations.

The seven TV ads were produced for just \$75,000 — a fraction of the million dollars that companies usually spend on such advertising campaigns. The ads were kept low by using an Amiga

Remember all the stories of '88? Steve Gold kicks off 1989 with the juiciest Stateside rumours from Atariville and Commodore city — remember where you heard it first.

subediting, the Atari 500 and 386007 several times over.

Canada not dry
Early in December was the world of Commodore Show held in Toronto. Commodore, in case you hadn't noticed, is now 30 years old, and has created a special mobile museum to commemorate the anniversary.

Coupled with the museum, several companies unveiled new Amiga products at the show. First, technology displayed its HD6506 hard disk adapter for the Amiga 4000 and 41000. The hardware adds for the Amiga allows an ordinary ST-506 hard disk controller to be hooked up to the Amiga. The end result is that cheaper PC hard disks can be hooked up to the Amiga and run quite happily.

Next, Rastatt, meanwhile, presented its new MAX Apple Mac emulator that plugs into the Amiga's external disk drive socket and allows Mac software to be loaded and run under AmigaDOS. The 12MB cartridge should be out in March '89, and does not need the Apple Mac ROM or that Dave Sear's Magic Sam and Spectre 1.2M disk require.

Rastatt also presented Flashback, a plugin unit that allows up to 100MB of hard disk data to be dumped to a standard video recorder. Flashback should be out in early February '89 at \$495.

Also shown in Toronto was a Deluxe Paint version II. The package, which should be out next March, is a major upgrade on version I and includes an animation facility. Deluxe Paint II also supports true animation and direct screen painting. Extra-high (64 colours), non-veg and full frame modes, as well as an improved font support with a new sequencer.

Finally, some good news on

the Amiga magazine front as well. Computer Publications announced that it will be launching a new Amiga magazine. The print-and-disk monthly magazine will be out in the Spring with a \$2 price tag. That such good value as ST/Amiga Format magazine with its disk, of course, but still worth keeping an eye open for if you can get import copies.

Atari prices falling

Now, it may just have been the pre-Christmas market that's causing competition amongst Atari ST desktop computers to cut their prices, but more than few industry watchers suggest that sales of the ST really are taking off in the US. Whatever the reason, the end result for existing ST users is that they get more bang for their money.

Practical Solutions has just unveiled a new product for the ST that will make Amiga users jealous. The company's has launched the Twenty board, a plugin unit that provides a full stereo output from the ST.

How does it do this? Simple. The ST series already has three channels of sound supported from within hardware. To (approximately) cut costs, Atari combined all three signals together to give a mono channel suitable for the ST range of monitors.

The Twenty board solves the problem with a small circuit board that actually divides the three channels back into their separate components. Because it uses the ST's standard three sound channels, it's fully compatible with all existing ST software.

The Twenty board plugs inside the ST and provides three independent phone outputs ready for connection to any suitable external amplifier and/or speakers. The good thing about the system is that the existing ST mono phone output to the monitor is not affected in any way.

And the price of this amazing board? A mere \$29.95 plus shipping. Practical also has some technical specification sheets. If any ST/Amiga Format readers want further information, contact Mark Louison of Practical at 010-602-600-7602, or Email Mark on Compuserve (76004, 2000) or Gene C on Practicals.

■ Gold Dust is compiled from the US online services by Steve Gold, a freelance journalist specialising in computer communications. Email, industry tips and comments are welcomed on Telecom Gold 72-MAC2068 or via the US Email networks: Compuserve (76004, 1199, 50025) or Galt & Co., and the Source on #7000.



■ Amiga — winning the battle in the US

to produce and edit seven US-second spot adverts aimed at the teenage market. The ads are also being distributed together to form at least four 30-second ads to promote the Amiga as a dual-purpose business and leisure machine.

Steve said that the owners of MTV and other teenage-targeted TV stations, where the adverts will be shown more than 1,000 times in the run-up to Christmas, have grown up with computers and video technology. They will, he says, be very interested in the Amiga, once they realise its capabilities.

Of course, there has to be a lure in the campaign. The lure is that every purchase of an A500 qualifies the buyer for a free video recorder worth \$249. Considering that's the equivalent of around a third off the full retail price of the A500, the baby Amiga looks like

BABY LAPTOPS

Finally, this month, and just in time for the launch of the Atari ST laptop, comes news of one company that has developed a special set of cards for laptops. Data Electronics is now selling its laptop card set complete for just \$129.95. Call Dave on 0416-430-400 or 431-0013 to find out how to fill in your Porsche mail.





FORMAT LETTERS

W/P-ing about

As a recent convert to the Amig having been subverted from my faithful BBC B of some 6 years it is would be very grateful for a little advice.

I must admit that I am essentially a user and not an experimenter, and am quite happy to fumble along just pressing the correct keys, with all the technical aspects going over my head at conceptual level, however...

I have been and continue to use my BBC for word processing, so I am a clerk at several organisations I am an early retired 63 years of age, and would love to use the Atari 520ST, recently purchased essentially for game play, for this purpose word processing, but no.

I can't find much about word processing in any of the mags, except that most of them appear to be extremely expensive to those who word processing program which is of the same caliber as Wordwise Plus or Interword for the BBC, and at a similar price!

© Mayes

Gillingham, Dorset

■ The very word processor we use to reply to you is probably a good bet. Based on the ST offers many of the features of Wordwise Plus, particularly the word processing language and formatting controls. Read our review of the Amiga version in this issue for more details. If you're more interested in the pull-down menu aspects of programs like Interword, you could try Word Writer ST or Word Plus, which both use the GEM environment. They all cost rather more than the basic word processors, though, starting at around £70.

Gunship down

For the first time in my life, (and I've gone way past my second childhood!) I am writing to a magazine. Obviously it's not only to ask you help to congratulate you at an ST/Amiga for a superb magazine, with a good selection of interesting, amusing, articles/soft-

New year sentiments from the loyal band of Format correspondents... send your opinions on life, the universe and everything to Format Letters, ST Amiga Format, 4 Queen Street, Bath BA1 1EJ and win yourself a luxurious real imitation leather Organiser for 1989.

ware and games software. After reading through the numerous mags, I placed a regular order with my local newspaper for...ST/Amiga for the Features, Applications, (Stereotype) so you have a lot to answer for.

I must confess I have only recently joined the computer scene and am a complete novice.

I have a problem, at least I think I have. On attending the Atari exhibition on Sunday 20th at the

Alexandra Palace, I purchased a 386 disk drive as a second drive for my Atari ST which is also only listed with the 0.5Mb drive. I am pleased with the new drive (the Everdrive 160000) which is working very well, but...

Several months ago a friend asked me to check an Atari 0.5Mb add-on drive. I bought it up for my 520STFM and it worked OK. I placed the Gunship II disk in Drive A and the II disk in the add-on

drive and the game read from both drives. I have tried to repeat this with the new drive but each time it accesses drive B the game flips out and back to the desktop. Is this usual using two different capacity drives? I have tried the other way by double clicking on A disk in Drive B and using your boot II utility, but it will only run with the B drive switched off and using the built in Drive A and changing disks, could you please help?

VJ Sutton
Rugby, Bath

■ It's possible that the Gunship program uses a 386 A drive disk and a 0.5Mb second disk, though this seems unlikely. It's more probable that the copy protection happens to be throwing out your A drive disk. If you need the hard drive option, check the alignment of the heads on your internal drive.

Changing sides

A friend recently told me the original games which he received with the ST1 Super Pack. Most of the twenty-one games didn't work on my machine. Quads and Zynox did.

He has a 1Mb drive with his ST and I purchased my 520 STFM from Sierra fitted with what I believe to be a 0.5Mb drive. When I load one of the disks, the Xerox/Quads disk for example, the GEM desktop appears. Then when I double click on either the Xerox or Quads program icons it begins to load the game in the normal way. Then a window opens and it tells me disk A is not responding and to check whether

Genlocked in



Not the case!

Indeed, the reason for this letter being written is to let you know the reason is because I have been using a genlock on my Atari to improve computer graphics for a Scottish and Newcastle training film (Dewar's Day Out - please find enclosed a VHS copy).

The genlock was fitted by Capital Computers in Edinburgh. Outwardly it consists of two-BNC sockets - a video in for the TV picture you want to cut in on and a video out for the original picture plus overlay. There's also a patch at the back to toggle between 'normal' and 'genlock' modes and a slide of software to get it all running. Usually the picture 'looks' in to pure white TFT, although white can still be achieved with TFT, say.

The Cyber series was used to create the original graphics and the whole shenanigan was put together on a high-end broadcast-quality edit suite. It must be said that the genlock I was using was not broadcast but there is a broadcast model available.

And the cost? A mere £250 for the non-broadcast or about £300 for the full broadcast. Systems have already been installed in Channel 4 and a number of other TV companies. By the way, I don't work for Capital Computers, I'm just very satisfied customer.

Dawson Moore
Edinburgh

■ Thanks for your information. Thinking about it, we wonder if most of the Amiga genlocks couldn't be used with the ST. The video input could be compatible, as you can run an ST into the Amiga's monitor with excellent results.



Qatar solo

For the past few months Steve Gold has talked about the possibility of a (paper) 68030 upgrade for the humble ST. With the advent of the Super ST has this 68030 job been delayed or will it ever see the light of day?

I have just moved to the Middle East and wait with bated breath each month for D wonder what is going on in the east. This is not as easy a job as it at first sounds. The train of events follows this: subscription copy sent to my mother in law in Northampton (also laughing), someone has got to live in Northampton, eventually she gets round to sending it on to me, at a very high postage cost. After Qatar an postal service have failed through it to see that there are no references to local or any pictures which show women in a state of undress it finally makes it to me. Total time, approximately a month. As for Atari dealers here in Qatar, forget it. The big computers down here are MSX (remember them?) and Amstrad CPC 64.000s.



the 68030 board. This might be what you're looking for, though it's not the latest Steve Gold has been writing about.

It's interesting to hear the state of computer play in Qatar. Perhaps we should work on an export edition, without any ads for Borisov or Wint.

It's a hard disk or to check its connections.

Are the disks with the super pack specified for a 1MB drive and therefore not able to work on a 0.5 meg drive? And if this is true why do Quadra and Lynx work?

If the disks do work only on a 1MB would there be any chance of making the other programs work on my 0.5 MB drive by using a disk copier. (The Deep Blue Reader on the Data pages you print in the magazine for instance?) I would be extremely grateful if you could shed some light on my problem.

Leigh Mabey
Widnesmore

■ As you suspect, the Super Pack disks are formatted for distributed drives. The two programs which do run happen, by coincidence, to be stored completely on the top side of the

disk, and so can be read by a single-sided drive.

We can't recommend you to copy the disks as this directly breaches the copyright on the games. If you bought the originals from your friend, you should then be entitled to copy them onto a format your computer can read although some software licenses prevent you legally selling the software in the first place. Even ignoring the legality, you will have trouble copying double-sided drives on a single-sided machine.

Dr Peter Miller
Doha, State of Qatar

■ See the news section this month for details of what's going on in Atari land.

■ See the news section this month for details of what's going on in Atari land.

Cumana ver to my place

I like Superheats Inc. I want to buy a second drive for my Amiga 500. Which one do you recommend?
Oguz Legayan
Turkey

■ So does.

We've heard good things about the second drive from Cumana. It costs around £700 and is available from several of the advertisers in Format.

BASIC autoboot

I have owned a Commodore 64 for several years and have managed to obtain a reasonable grasp of Commodore BASIC. Recently I purchased an Amiga 500 and I'm trying to get to grips with AmigaBASIC. I followed the example in your Whetstone's section (issue 4) to create a bootable Amiga BASIC disk, having finally got it to work. I wondered if you could tell me how to load a BASIC program from the startup sequence, so that it runs the moment the disk is booted.

I've tried adding the name of the program to the startup sequence but I just get an error code 121. I've also tried "running" it but the same thing happens.

J F Canny
Brentford

■ You'll need to get the program file AmigaBASIC from the Extras disk into the C directory of your boot disk (a COPY of the Whetstone's master disk). To do this you'll need to erase unused printer drivers or fonts from the Whetstone's to make room for BASIC. Then you add the line AMIGABASIC -PROGRAM NAME - to the startup sequence and you should be away.

Numbering off

I don't own an A500 yet, so I spend time by reading your BASIC programs.

I noticed that in the A500 listings there are no line or program numbers, as with Commodore 128 BASIC. Line numbers seem to be very handy, especially with the GOTO, IF, THEN and GOSUB commands. Is it possible to use line numbers in an A500 BASIC program?

Swings and roundabouts

Regarding the contents of ST Amiga Format issue 6, I wish to register my complaints of the alarming disparity of the contents of this disk between the ST and the Amiga.

I have an Amiga 500 and none of the games offered for my enjoyment remotely interest me but the fantastic selection offered for the ST made my mouth water (there I may have gone a little over the top) these Colossal Chess X, Diamonds and Accurates all ready to use. On the facility ST system. As I have only owned my 500 for a very short time I'm sure hopeful that the goodiebaggoos written in the read-me files of Handy Icons, AC-windows and Perfect Sound will eventually all become crystal clear but at the moment just about all I understand is "press space bar to continue".

I'm certain that I'm not the only beginner who has subscribed to your magazine in the hope of helpful hints and tips etc, but I feel the magazine is now pressuring the readers have a far greater knowledge of the intricate workings of the Amiga that can be obtained by reading Commodore's booklets.

Can Format:

a) stop ensuring every reader has a PhD in computing.
b) give a more equal balance to the contents of the monthly disk.
c) keep on the good work as you have even managed to teach me how to "press space bar to continue"

Ray Blomster
Barnbury

Why is it Format persists with its annoying bias towards the Amiga. Take the issue 6 disk, for instance. The Amiga side contained 1 Perfect Sound demo, which would have been ideal for my budding interest in computer music and Soundflow, which would be good for my graphics work. All we 500ers get is a limited chess demo and a most-likely game. It's really not good enough to offer better programs on one side of the disk than the other.

While I'm at it, a lot of the text in Format is much too simple for most readers. We don't want interminable explanations of the copying and opening windows. How about an article on accessing the ST's screen memory and poking the video display registers.

Come on Format, give the people what they want.

J. Williams
Black Turginton, Devon

■ You see our problem.



is GSI BASIC, as the PC the same as Amiga BASIC? Or with line numbers.

W. Kaul
Bantry, Ireland

■ Line numbers can be included in Amiga BASIC listings, but only as named labels. This means you can add GOTO them or GOSUB on them, but it is really much more useful to give discrete sections of your programs meaningful names. A subroutine called PrintLabel is a lot easier to understand than one called 2017.

Protection racket

As an avid fan of 16 bit computers, I was horrified to find that the software for these machines is considerably more expensive than its 8 bit counterpart.

For this reason I am complaining about the so called 'anti-copy' protection of some of these games. I could personally do better with an 8 bit and already have done!

I recently obtained *Offlined* for me by a friend who hoped to include it himself, unfortunately making it difficult to run the program, since it asks for a specific word from the manual. This falls in line with a lot of the anti-copy ideas in quite a few games. (Wow! Except for the fact that the latter manual is not long enough to make the end of photocopying profitable, and, seriously, it means that some, if not all, of the manual has to reside in memory, thereby using valuable space that could be otherwise used.

I decided to look into this in more detail. With Amiga's disk drive, to be precise, I'm not going to make it any more easy than it already is by trying all concerned exactly where and how I did it, but it suffice to say it took me five minutes to find the information. I rely only to backup existing software and to use it if I like a program before I buy it - essential in my view, owing to the cost of it.

My recommendations for rent out users, and many thanks to the writers and producers of the following.

STOS. Mandarin Software. Well made, well documented, well priced. It is so easy to use, it hardly needs the massive, comprehensive manual that goes with it.

Degas File. Batteries included. Great documentation, good idea within the program, but could have done with an 'arc' selection rather than having to cut off the unselected section of a circle.

Antich. Disk Doctor... Good,

but not without very minor irritations, for printing, the zero numbers are skunked 4 characters to the left, but otherwise usable.

Last, but by no means least: **ST/Amiga Format...** Future Publishing Ltd. Keep it good! Great magazine with a readable attitude towards computers. PLEASE, don't turn into a games catalog like so many mags in the past have done. So far it is the only magazine that I buy regularly, rather than only when an article interests me as with other mags.

D. H. Saunders
Birmingham, Kent.

■ Thanks for your kind comments on the mag. We're not quite sure what you're trying to say in the first part of your letter, though, it seems to be that copy protection on 16 bit software isn't good enough. This certainly runs against the trend, most people continue to campaign for a slackening of backup restrictions.

Doctor, doctor

I have got hold of a PD disk which is full of documents that make the ST in late '88 and '89. One of the files concerns a ROM virus. I will explain. The ROM virus is a virus that manages to break open the weakest part of the protected RAM and makes a very easy passage to the ROM. Once it's in, it damages every disk and also writes itself to that disk, so that when you boot up, the disk that is selected writes it again to the

same place, but if the virus is already there, it multiplies by 2 and writes itself again twice to a different place, thus making it difficult to find. There is an eight-day keypress that will get rid of it, but no-one knows it apart from the person who made the virus.

This virus causes permanent damage to your ST and can either be removed by a very silly programmer, or by buying a new ROM which costs £30 plus repair man's labour £25 = £55, just for a repair job because of a stupid virus.

Stephen Towels
Stephen Mallet, Somerset

PS. Every time you press the wrong key it doubles.

PPS. The code line in the test sector of the test track, but is loaded by the boot sector.

■ Or, should that be late '87 and '88, or do you have methods at your disposal about which we as yet know nothing? You're obviously working with different technology from ours anyway, if you have found a virus which will infect a ROM. You seem to have fallen for some elaborate practical joke.

While it's true that viruses can infect an ST and pass their selves from disk to disk, they cannot infect a ROM, as this is a Read-Only Memory. It can only be programmed with a specialised machine and not done within the ST. We know of no virus that can permanently damage the hardware of an ST, although it can damage floppy or hard disks, and

in the worst case make them unusable.

GST upgrade

I would be very pleased if I could post this letter as I find that GST software is first.

I had some trouble with my 1st Word word processor so I wrote to GST asking them if they could help. They replied with a letter stating that they would update my disk at no charge, so I sent GST my disk along with the manual. I received it back in seven days with a perfect running program and compliments of GST. I only wish other software buyers would take a leaf out of GST's book. If you'd print this letter please put a big thank you to GST! Software from me. By the way, thanks for the paper magazine, I think it is absolutely fantastic, and I won't hesitate in renewing my subscription.

P. J. McFelly
Hartley, Gwynedd

■ Good to just a bouquet among the localists.

NO ECHO, No Echo, no echo

Finally I would like to congratulate you on what a mega mag you do! In. No other mag gives a disk away every month, and no other is packed with news, reviews, and tips.

After reading your Sample City round up of samplers for the Amiga and ST, I decided it was time to introduce a sampler to my ASOS. I decided on the Pro Sampler Studio, because it looked very straightforward and powerful. There was one thing I couldn't understand after comparing the ST and Amiga samplers and that was the fact that the ST sampler had a newbeat/syncho mode - why didn't any of the Amiga samplers have that function? We all know the ASOS can put the ST's sound to shame, so why not, in a way I did want a sampler for the echo function.

Lastly, I was wondering whether there is a suitable effects module on the market. I would be very grateful for a reply.

Dick Bacon
Sharnham-by-Sea

■ Regis AudioMaster, sampling software which is compatible with most Amiga samplers, does have a newbeat function. The software itself costs around £35, though you have to add the cost of a sampler to that. Check the ads in this issue for a supplier.

St. Format

In a recent acquisition of your excellent quality promotion, which I often find a wonderful misrepresentation of erudition, I overheard a conversation between 2 John Manders' shop assistants, obviously on loan from ST's 'n.

It went as follows:
Assistant 1: Pass the Saint Amiga Formats.

Assistant 2: Who is Saint Amiga anyway?

Assistant 1: Father Saint of Computer books, probably.

Assistant 2: Don't be silly, they wouldn't have a patron saint.

I am all for a Father Saint for computer users, but not Saint Amiga. Saint ST/STORM

Andrew Kennedy
Dundee

■ Ah, well - we've always thought of ourselves as martyrs to the Cause!



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